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Part V

Consumer Product Safety Commission

Interim Safety Standard for Cellulose Insulation; Cellulose Insulation Labeling Requirement

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1209

Interim Safety Standard for Cellulose Insulation

AGENCY: Consumer Product Safety Commission.

ACTION: Amendment to standard.

SUMMARY: In this document the Commission amends its interim safety standard that addresses the flammability and corrosiveness of cellulose insulation. A recently enacted law required the Commission to publish that standard, which is based on a General Services Administration (GSA) Specification for cellulose insulation. The law also required the Commission to propose an amendment to its standard based on a related revision GSA made to its Specification. After considering comments and other available information on the proposed amendment and after consulting with the Department of Energy, the Commission is amending the interim standard. The Commission is taking this action since it has found, as required by law, that the available information does not show that the amendment is not necessary for the protection of consumers from the unreasonable risk of injury associated with flammable or corrosive cellulose insulation. The Commission also has found that the available information does not show that implementation of the amendment will create an undue burden on persons who are subject to the standard.

DATE: Cellulose insulation manufactured after October 15, 1979 must comply with the requirements of the revised standard including the labeling requirement. Cellulose insulation manufactured before October 16, 1979 must continue to meet the requirements of the interim standard based on GSA Specification HH–I–515C (43 FR 35240, August 8, 1979).

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SUPPLEMENTARY INFORMATION:

I. Background

On July 11, 1978, the "Emergency Interim Consumer Product Safety Standard Act of 1978," Pub. L. 95–319, became law. This legislation amended the Consumer Product Safety Act (CPSA) (15 U.S.C. 2051 et seq.) by adding a new section, section 35, that required the Commission to issue an interim consumer product safety standard for cellulose insulation based on the requirements for flame resistance and corrosiveness in the General Services Administration (GSA) Specification HH–I–515C, as effective February 1, 1978.

As required by the statute, the Commission, on August 8, 1978, published the interim consumer product safety standard addressing the flame resistance and corrosiveness of cellulose insulation (43 FR 35240). The interim standard became effective September 8, 1978, so that insulation manufactured after September 7, 1978, must comply with the standard.

The "Emergency Interim Consumer Product Safety Standard Act of 1978" also provides that until a final consumer product safety standard is in effect, the Commission must publish for public comment amendments to the interim standard to incorporate each revision GSA issues that supersedes the requirements for flame resistance and corrosiveness in GSA Specification HH–I–515C. The Commission may make appropriate changes in the GSA revisions before proposing the amendment for public comment. The Commission must issue the amendment unless the Commission determines, after consulting with the Secretary of Energy, that the amendment is not necessary to protect consumers from the unreasonable risk of injury associated with flammable or corrosive cellulose insulation or that implementation of the amendment will create an undue burden on persons who are subject to the interim consumer product safety standard.

The General Services Administration has informed the Commission that, effective June 15, 1978, it has issued GSA Specification HH–I–515D. Since this specification contains requirements for flame resistance and corrosiveness for cellulose insulation that supersede the requirements of GSA Specification HH–I–515C, the Commission is required by Pub. L. 95–319 to publish the flame resistance and corrosiveness provisions of HH–I–515D as a proposed amendment to the interim standard.

After the proposed amendment has been published, the act provides 30 days for interested persons to submit comments. Within 90 days after the end of the 30-day public comment period, the Commission must either publish the amendment as a final amendment or withdraw the proposal.

On September 6, 1978, the Commission published a notice of intent to propose an amendment to the interim standard (43 FR 39720). The notice of intent included the flame resistance and corrosiveness provisions of HH–I–515D and solicited comments on these provisions and related issues. On March 8, 1979 the Commission published a proposed amendment to the interim standard based on the flame resistance and corrosiveness provisions of HH–I–515D, along with changes made by the Commission (44 FR 12872).

In addition to publishing the proposed amendment, the Commission also proposed a certification rule under section 14 of the CPSA (15 U.S.C. 2063) (44 FR 12684, March 8, 1979). Elsewhere in this issue of the **Federal Register**, the Commission has published a final certification rule, which becomes effective October 16, 1979, the same date that the amendment becomes effective. The certification rule prescribes requirements that manufacturers, private labelers, and importers must follow to certify that their products comply with the amended interim standard. The certification rule contains requirements for conducting a reasonable testing program, for recordkeeping, and for certifying. The requirements will assist manufacturers, private labelers, and importers in complying with the amended interim standard and will also help the Commission monitor compliance with that standard.

Elsewhere in this issue of the **Federal Register**, the Commission has also published a final rule under section 27(e) of the CPSA (15 U.S.C. 2076(e)) that would require manufacturers of cellulose insulation to include labeling on their product concerning the proper installation of cellulose insulation to prevent fires. The labeling requirements under section 27(e) also becomes effective October 16, 1979.

II. Description of the Amendment

The amendment to the interim standard, 16 CFR Part 1209, prescribes flame resistance and corrosiveness requirements for cellulose insulation manufactured for use as a consumer product. The amendment to the interim standard applies to all such cellulose insulation manufactured after October 15, 1979. The requirements of the amendment are intended to reduce or eliminate an unreasonable risk of injury to consumers from flammable and corrosive cellulose insulation. Cellulose insulation manufactured before October 16, 1979 but after September 7, 1978 must comply with the interim standard based on HH–I–515C.

As provided by Pub. L. 95–319, the amendment contains the flame resistance and corrosiveness provisions of GSA Specification HH–I–515D (with several changes discussed below), since these provisions supersede the requirements for flame resistance and corrosiveness in GSA Specification HH–I–515C.

The Commission has not included the following paragraphs of HH–I–515D in the amendment since these paragraphs do not contain provisions superseding the requirements for flame resistance and corrosiveness in GSA Specification HH–I–515C: Paragraph 1, *Scope and Classification;* paragraph 2, *Applicable Documents;* paragraph 3, *Requirements;* 3.1 *Material;* 3.1.1 *Qualification;* 3.1.3 *Starch;* 3.1.4 *Thermal Resistance;* 3.1.5 *Moisture Absorption;* 3.1.6 *Odor Emission;* 3.1.8 *Fungi Resistance;* 3.2 *Marking;* 3.2.3 *Workmanship;* paragraph 4, *Quality Assurance Provisions;* 4.1 *Responsibility for Inspection;* 4.2 *Classification of Inspections;* 4.3 *Qualification Tests;* 4.4 *Sampling for Qualification Tests;* 4.5 *Quality Assurance Inspection;* 4.6 *Sampling;* 4.7 *Examination Tests;* 4.8.2 *Thermal Resistance;* 4.8.3. *Moisture Absorption;* 4.8.4 *Odor Emission;* 4.8.6 *Fungi Resistance;* 4.8.9 *Starch;* 4.9 *Quality Assurance Test Methods;* 4.9.3 *Thermal Resistance;* paragraph 5, *Preparation for Delivery;* paragraph 6, *Notes.*

A. Scope and Application

Section 1209.1 of the amended interim standard describes its scope and application. The amended interim standard contains requirements based on GSA Specification HH–I–515D that are intended to reduce or eliminate an unreasonable risk of injury to consumers from flammable and corrosive cellulose insulation.

As does the current interim standard, the amended interim standard applies to cellulose insulation that is a consumer product, that is, insulation produced or distributed for sale to or for the personal use, consumption, or enjoyment of consumers in or around a permanent or temporary household or residence, a school, in recreation, or othewise. The amended interim standard applies to cellulose insulation that is produced or distributed for sale to consumers for their direct installation or use, as well as insulation that is produced or distributed for installation by professionals. As required by section 9(d)(1) of the Consumer Product Safety Act (CPSA)(15 U.S.C. 2058(d)(1)), the amended interim standard applies only to cellulose insulation manufactured on or after the effective date of the amendment (October 16, 1979).

B. Definitions

Section 1209.2(a) of the amendment defines the consumer product covered by the amended interim standard. For purposes of the amended interim standard, "cellulose insulation" means cellulosic fiber, loose fill, thermal insulation that is suitable for blowing or pouring applications. Like the present interim standard, the definition in the amendment is a broad definition. The definition does not specifically exclude insulation installed using the "wet process" method of installation ("Wet process" insulation is blown into an area with a spray or mist of water applied at the nozzle during installation) or insulation installed using a spray-on process with wet or dry adhesives.

The Commission intends wet process and spray-on insulations to be included within the scope of the amendment since they fall within the general definition of cellulose insulation. As provided in this definition, these insulation materials are made of cellulosic fiber and are thermal insulation suitable for blowing application. Although these insulation materials are generally not "loose fill" materials after application, they are loose fill materials before installation and may be installed as loose fill insulation. The Commission will test wet process and spray-on insulation as loose fill insulation under the amendment. However, if wet process or spary-on insulation is applied as intended, the Commission recognizes that the test procedures of the amendment may not directly correlate with or allow persons to assess the true flame resistance properties of the materials after application.

Because of these concerns, in the proposal the Commission specifically included wet process insulation in the definition of cellulose insulation and asked for the comments on the definition and on the issue whether spray-on types of insulation should be specifically excluded from the definition (44 FR 12873–12874, March 8, 1979). In response to the proposal, the Commission did not receive any comments presenting information showing that these insulation materials should be included or excluded from coverage under the amendment. If interested persons believe that these types of insulation should be tested under some other test procedure, these persons may petition the Commission to exclude them from the amendment and to issue a rule containing different requirements and test procedures. Before the Commission would consider such a proposed rule, the petitioner must present evidence demonstrating that the test method recommended by the petitioner adequately addresses the flammability hazard presented by these types of insulation when applied as intended. Even if such a regulation were adopted, the Commission would still test the insulation in its loose fill state and require the insulation to meet the flame resistance requirements of the amendment as presently issued, unless individual manufacturers demonstrated that the insulation was not, in fact, installed as loose fill insulation.

C. Corrosiveness Provisions

The amendment includes requirements and test procedures for the corrosiveness of insulation. (See §§ 1209.3(a) and 1209.5 of the amendment.) As provided by Pub. L. 95–319, these provisions are based on the corrosiveness provisions of GSA Specification HH–I–515D, which revised the corrosiveness provisions of GSA Specification HH–I–515C. The Commission has made several changes in the provisions, as discussed below. The test method of the amendment provides that insulation test specimens are saturated with distilled or deionized water and are placed in contact with thin metal coupons. Aluminum, copper, and steel coupons are used. The saturated insulation and metal coupon assembly (also referred to as a composite specimen) is placed in a forced air humidity chamber at high temperature and high relative humidity for 14 days. Subsequently, the coupons are removed from the composites, cleaned, and examined over a light bulb for perforations. If any metal coupon is observed to have any perforation (excluding notches which extend into the coupon 3 mm or less from any edge), then the insulation fails the corrosiveness requirement.

The corrosiveness test method of the present interim standard differs from the test method of the amendment in the procedure for preparing the metal coupons and insulation specimens, the type of coupons used in the test, the amount of time the specimens are left in the humidity chamber, and the coupon post-cleaning. The amendment requires that the corrosiveness test method and the smoldering combustion test method (described below) be conducted using the results of the measured settled density of the cellulose insulation. At § 1209.4 the amendment includes a test procedure for determining settled density. This test method for

determining settled density uses a cyclone-shaker and is different than the blown density test method in the current interim standard (at § 1209.7). As explained in section III of this preamble concerning Commission changes, the cyclone-shaker test method is also different from the test method for determining settled density at paragraph 4.8.1 of HH–I–515D.

D. Flame Resistance Provisions

The amendment would supersede the flame resistance provisions of the present interim standard by replacing these provisions with two new requirements and procedures for determining flame resistance: the requirement and test procedures for critical radiant flux (see sections 1209.3(b) and 1209.6 of the amendment) and the requirement and test procedures for smoldering combustion (see sections 1209.3(c) and 1209.7 of the amendment).

The present interim standard based on HH–I–515C requires cellulose insulation to have a flame spread rating not greater than 25 when tested in a Steiner tunnel. Insulation must also pass a flame resistance permanency test that uses the Steiner tunnel and a smaller, two foot, version of the tunnel. The tunnel test measures how quickly a given material burns. The amendment replaces the tunnel test with the attic floor radiant panel and smoldering combustion tests. These two tests evaluate the fire performance of cellulose insulation by specifying both open flame and smoldering ignition sources to better simulate real-life conditions.

The attic floor radiant panel test is designed to measure the resistance of a material to surface burning under realistic conditions. To accomplish this, the test uses a panel to generate heat which is directed toward the surface of the test specimen. The amount of heat received by the specimen decreases as the distance from the heat source increases. The specimen is ignited at the hot end by a small pilot burner; and, if the flames propagate, the specimen burns toward the cool end. After the flames have extinguished, the person conducting the test measures the extent of burning present on the specimen. The person conducting the test then converts and reports this measurement as "critical radiant flux." The amendment requires all test specimens to have a critical radiant flux equal to or greater than 0.12 W/cm2 (Watts per square centimeter) in order to pass the test. At § 1209.8 the amendment includes a procedure for calibrating radiation instrumentation used in the test procedure for critical radiant flux.

The requirements and test procedures for smoldering combustion in the amendment are designed to determine the potential of a material to undergo sustained smoldering combustion when exposed to a moderate heat source. A lit cigarette (lit end up) is placed in a small specimen of conditioned insulation (at settled density) in an open-top stainless steel box. The specimen holder is weighed before the test, first without, and then with, the test specimen. The cigarette and specimen are allowed to burn for at least two hours or until the smoldering has ended. After the smoldering has ended, the specimen holder and any residue are weighed, and the percent weight loss of the original specimen is calculated. In order to pass the requirements of the amendment for smoldering combustion, the insulation must have no evidence of flaming combustion and a weight loss of 15 percent or less of the initial weight of each of the specimens tested.

The amendment does not include the flame resistance permanency requirements of the present interim standard, since flame resistance permanency has been eliminated from the revised GSA Specification HH–I–515D.

E. Labeling Provisions

The present interim standard, at section 1209.9, requires manufacturers and private labelers to place the following statement on their containers of cellulose insulation: "Attention: This material meets the applicable minimum Federal flammability standard. This standard is based upon laboratory tests only, which do not represent actual conditions which may occur in the home." As provided by Pub. L. 95–319, this label requirement remains in effect only for insulation subject to the interim standard based on HH–I–515C. The amendment, at § 1209.9(a), includes a label requirement to enable persons to distinguish insulation that meets the requirements of the amended standard. The label states: "This product meets the amended CPSC standard for flame resistance and corrosiveness of cellulose insulation." This label requirement replaces the label requirement of the present interim standard for insulation manufactured after the effective date of the amended standard.

The amendment provides that manufacturers may use any type of label, including a pressure sensitive or glued on label, to meet this requirement provided the label is made and attached in such a manner that it will remain attached to the insulation container and be legible for the expected amount of time between the manufacture of the product and its installation. The amendment, at § 1209.9(b), specifies the size of the label and requires the label to be printed in legible type in a color which contrasts with the background on which the statement is printed. Unlike the present interim standard, which included a reference to CPSC regulations under the Federal Hazardous Substance Act for designing a label that is prominent and conspicuous, § 1209.9(b) specifies the size of the label in order to eliminate confusion.

Elsewhere in this issue of the **Federal Register**, the Commission has published a rule under Section 27(e) of the CPSA that requires manufacturers of cellulose insulation to label their products with information concerning the proper installation of cellulose insulation to avoid potential fire hazards.

Manufacturers may combine the labeling statement required by the amendment issued here, the certification rule, and the installation labeling required under Section 27(e) in the same label.

F. Certification and Enforcement

As explained in § 1209.10(a), section 14 of the CPSA (15 U.S.C. 2063) requires any manufacturer or private labeler of a product subject to a standard to certify that the product conforms to the standard. The certification must be based on either a test of each product or a reasonable testing program. Elsewhere in this issue of the **Federal Register**, the Commission has issued a certification rule that provides certification requirements.

As explained at § 1209.10(b), the Commission intends to use the test procedures in the amendment to determine whether insulation complies with the standard.

G. Effective Date

At §1209.11, the amendment provides that all cellulose insulation that is a consumer product and that is manufactured after October 15, 1979, must meet the requirements of the amended standard. (For the purposes of this regulation, the cellulose insulation product is manufactured when the insulation is packaged in the bag or container intended to be sold to the installer or consumer. Insulation that is not sold in bags or containers is manufactured when the insulation leaves the manufacturing site to be sold.) The Commission believes that this

effective date is reasonable since the requirements of the amendment, including the labeling requirements, can be met within the period from July 6, 1979 through October 15, 1979 and since the amendment will be in effect before the height of the 1979 purchasing season.

III. Commission Changes to the Flame Resistance and Corrosiveness Provisions of HH–I–515D

Section 35(c)(2)(C) of Pub. L. 95–319 authorizes the Commission to make changes in the flame resistance and corrosiveness provisions of HH–I–515D in order to make these provisions suitable for issuance as an amendment to the interim standard. The legislative history of the act indicates that the Commission could modify the existing test methods in HH–I–515D or develop a new test method for flame resistance or corrosiveness in order to ensure reproducible results, adequately simulate a home situation, or deal with a problem that is not adequately addressed by the GSA revision. The Commission may also make technical nonsubstantive changes, such as numbering changes, correction of typographical errors, and the addition of tolerances, to ensure that the revision is suitable for issuance as a mandatory product safety rule (H.R. Rept. No. 95–1322; 95th Cong., 2d Sess. 13(1978) and H.R. Rept. No. 95–1116; 95th Cong., 2d sess. 7–8(1978)). The Commission describes below the changes it has made in HH–I–515D in issuing this amendment, along with the reasons for the changes.

Test procedures for determining settled density (§ 1209.4). At § 1209.4(a)(1), the Commission has substituted a new test apparatus and procedure for determining settled density in place of the test apparatus and procedure described at paragraph 4.8.1 of HH–I–515D. The new test method, the cyclone-shaker test method, was recommended by the Department of Energy after the Department of Energy conducted comparison studies between this test method and the settled density test method of HH–I–515D.

The CPSC engineering laboratory conducted comparison tests between the present test method of HH–I–515D (with slightly modified temperature and humidity conditions) and the cyclone-shaker test method of the amendment. The tests indicated that there were only minimal differences between results obtained using the two test methods. The Commission has no evidence to indicate that the cyclone-shaker test method is less reproducible or reliable than the test method in HH–I–515D.

The environmental conditioning apparatus, required in conjunction with the GSA settled density test, presently specified in paragraph 4.8.1 of HH–I–515D, is reportedly difficult to obtain and may have to be custom built. The conditioning chamber necessary to reproduce these environmental conditions would be expensive. The conditioning chamber would also have a limited capacity, which would restrict the number of specimens that could be tested during the 28 day conditioning period.

The Commission believes that the change should result in a test procedure that is easier, less expensive, and less time consuming for the manufacturer and testing laboratory. The conditioning requirement in the amendment is identical to the conditioning requirements for the smoldering combustion test and the attic floor radiant panel test, so there is no need to purchase additional equipment for measuring settled density. In addition the change will allow settled density to be determined within a matter of several days instead of the minimum 28 days presently specified in HH–I–515D.

The Commission has included two figures in the amendment (figures 1 and 2) showing the settled density apparatus. These figures were not included in HH–I–515D.

Test procedures for corrosiveness. (§ 1209.5). The Commission has included the following changes in the amendment concerning the test procedures for corrosiveness:

(1) At § 1209.5(a)(1), the Commission has changed the wording of the requirement for the humidity chamber in HH–I–515D to describe the humidity chamber as a "forced air" humidity chamber. The present wording of paragraph 4.8.5 of HH–I–515D does not describe the humidity chamber as a forced-air type. GSA has advised the Commission staff that GSA has conducted tests using the forced-air humidity chamber in developing the GSA Specification HH–I–515D and has consistently interpreted the humidity chamber as a forced-air humidity chamber. To better ensure that all testing laboratories will be using the same humidity chamber systems, the Commission has specified a forced-air humidity chamber. The Commission believes that most testing laboratories already have available and frequently use such forced-air systems.

(2) Throughout § 1209.5, the Commission has changed the type of dishes for the composite test specimens from "evaporating" to "crystallizing" This change has been made so that the type of dish is consistent with current laboratory practices and with the present interim standard. The change will also allow the test coupons to be centered more easily in the insulation specimens. The change has been made at § 1209.5(a)(2) and at several places in § 1209.5(b) of the amendment.

(3) Throughout § 1209.5, the Commission has changed the term test "specimens" to test "coupons" to describe the thin metal squares that are used to evaluate corrosiveness. This change has been made since the word "coupon" more accurately describes these metal squares and eliminates possible confusion with the "specimens" of cellulose insulation. The change has been made at § 1209.5(a)(3), and at several places in § 1209.5(b).

(4) At § 1209.5(a)(4) the Commission has changed the description of the "Insulation Sample" in paragraph 4.8.5 of HH–I–515D to specify that six insulation test specimens shall be used for one test, and that each specimen shall weigh 20 g. This change has been made in order to clarify the number of specimens to be used and to provide a full description of the test specimens at one place in the standard.

(5) At § 1209.5(b) the Commission has included a new procedure for cleaning the metal coupons. The Commission has included this change in the amendment since the cleaning procedures in paragraph 4.8.5 of HH–I–515D may result in incomplete removal of grease and surface contaminants and may lead to poor reproducibility of test results. The cleaning procedure in paragraph 4.8.5 of HH–I–515D is inadequate to achieve the necessary water-break free surface criterion to ensure that the metal coupons are clean. To ensure that the coupons would not be contaminated during handling, the Commission has specified that coupons not be touched by ungloved hands. The Commission has specified that chemicals used in the cleaning process be of a reagent grade free of oily residue and other contaminants, since different qualities of solvents are available. Solvents that are of low grade quality may not effectively clean the metal coupons.

(6) At § 1209.5(b) the Commission has changed the procedure for preparing the insulation test specimens and the description of the method for calculating the quantity of distilled or deionized water to be used with each specimen. The Commission has also included an instruction that persons conducting the test should exercise care in preparing the composite specimens to eliminate air pockets from forming next to the metal coupons. These changes are intended to

reasonably ensure that homogeneous specimens are obtained, thus addressing variability due to possible separation of dry chemicals from the cellulose insulation and variables associated with the formation of air pockets. The changes should improve the reproducibility of the test method.

(7) At § 1209.5(b), the Commission has included a statement providing that care should be taken to avoid evaporation of water from the time when the specimen is being prepared until the time when the specimen is placed in the humidity chamber. The purpose of this change is to minimize possible variations in test results that may occur from evaporation.

(8) At § 1209.5(b), the Commission has included a clarification that the specimen preparation be repeated for all metal coupons to avoid any possible confusion.

(9) At § 1209.5(b) the Commission has changed the amount of time the specimens are to remain in the humidity chamber from 14 days to 336±4 hours to clarify the time frame in which the test is considered to be complete.

(10) At § 1209.5(b) the Commission has included a clarifying statement that any opening of the humidity chamber door be kept to a minimum while the composite specimens are placed in and removed from the humidity chamber. Although it is necessary to open the door of the humidity chamber to put new specimens into the chamber or take tested specimens out of the chamber, opening the doors should be kept to a minimum since opening may lead to fluctuations of the temperature and humidity. Therefore, the purpose of this change is to avoid possible variations in test results that may occur as a result of variations in the controlled temperature and humidity conditions of the humidity chamber.

(11) At § 1209.5(b) the Commission has clarified the test procedure to provide that, after the test is completed, the metal "coupons" should be brushed with a "soft nylon bristle brush or equivalent" to remove loose corrosion products. The use of the "soft nylon bristle brush or equivalent" has been included since the use of a hard bristle brush could artificially cause perforations that were initiated but not completed during the corrosion test.

(12) At § 1209.5(b) the Commission has changed the procedure for removing the remaining corrosion products from the metal coupons to provide that these coupons be cleaned in accordance with specified practices identified in "ASTM G 1—Standard Recommended Practice for Preparing, Cleaning, and Evaluating Corrosion Test Specimens" (American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103). The procedure in HH–I–515D for removing corrosion products calls for a simple nitric acid dip. The Commission's change would allow post-cleaning of the metal coupons by methods which substantially reduce removal of intact metal and provide for more accurate evaluation of the corrosion the test coupons may experience. The Commission has also included a cautionary statement concerning the safe preparation of the cleaning solutions used for cleaning the coupons after the test.

(13) At § 1209.5(c) the Commission has changed the procedure for determining noncorrosiveness to exclude notches which extend into the coupon 3 mm or less from any edge. (The Commission had proposed that notches extending 1 mm or less be excluded.) The Commission believes that this change will minimize variations in judgment that may occur in determining noncorrosiveness. The notches frequently represent effects on the edges of the coupons occurring because of coupon preparation rather than corrosion from the test specimens, and should not be used in judging corrosiveness.

(14) At § 1209.3(a) and § 1209.5(b) the Commission has changed the procedure for examining the metal coupons to eliminate the requirement that the coupons be examined under a "chrome reflected" light bulb. The reason for this change is that the Commission believes that a 40-W appliance light bulb without a chrome reflector is sufficient for examining test coupons for perforation.

(15) At § 1209.3(a) the Commission has provided that no perforation "of any of the six" 3 mil metal "coupons" shall be evident. The change has been made to clarify that the metal coupons are examined, rather than the specimen of insulation.

(16) Throughout § 1209.5 the Commission has made numerous technical non-substantive changes, such as editorial changes, the addition of tolerances, the use of consistent measurement units and the inclusion of equivalent units, to ensure that the amendment is suitable for issuance as a mandatory safety standard.

Test procedures for critical radiant flux (§ 1209.6). The Commission has included the following changes in the amendment concerning the test procedures for critical radiant flux:

(1) At § 1209.6(a) the Commission has added the words "or equivalent" after the words "an air-gas fuel radiant heat energy panel". This addition has been made since it may be possible for improved panels to be developed which will produce test results that are in agreement with the test results obtained using the specified panel. At the present time, however, the Commission is not aware that an equivalent panel is available.

(2) At § 1209.6(b)(1) the Commission has replaced "Marinite XL" with "Marinite I" in order to correct an error in HH–I–515D.

(3) At § 1209.6(b)(2) the Commission has included a provision that would allow for alternative gas and air mixing systems. Since the standard provides that these gas and air mixing systems must be equivalent to the venturi-type system specified in HH–I–515D, the use of alternative systems would not affect test results.

(4) At § 1209.6(b)(2) the Commission has deleted the requirement that the test chamber shall be capable of operating at temperatures up to 816° C (1500° F). The Commission has deleted this phrase since the Commission does not believe that it is necessary to specify a maximum operating temperature for this apparatus. The maximum operating temperature is not related to ability of the apparatus to test cellulose insulation.

(5) At § 1209.6(d) the Commission has deleted a section entitled "typical examples" under the heading "Test Specimens" since the examples are not an essential part of the standard and do not clarify the test procedure. Also, in this section the Commission has added the requirement that three specimens per sample shall be tested since the Commission believes that three specimens are necessary and sufficient for statistical reliability.

(6) At § 1209.6(d) the Commission has included a different method for preparing specimens of insulation intended for pneumatic applications. HH–I–515D and the proposed amendment provided that the test specimens intended for pneumatic application are blown into the tray through a commercial blower using 100 feet of 2 inch flexible blower hose. In its experience with this method, the Commission has found that the method is cumbersome since it requires the use of a separate room for blowing the insulation and produces a large volume of dust in the atmosphere. The method in the amendment for preparing these specimens provides for the blower/cyclone apparatus in section 1209.4(a) to be used in installing the specimens in the specimen tray. The Commission believes that this method will ensure uniformity in preparing these specimens

and provides for a relatively easy and convenient method of preparing the specimens. The Commission has made the change since the blower/cyclone method in the amendment produces the same results as the method in HH–I–515D, yet requires less equipment for testing and does not produce as much dust as the method in HH–I–515D.

(7) At § 1209.6(e) the Commission has added the statement "In a continuing program of tests, the flux profile shall be determined not less than once a week. Where the time interval between tests is greater than one week, the flux profile shall be determined at the start of the test series." The Commission has added this statement to assist in obtaining a flux profile in accordance with the standard where tests are conducted at infrequent intervals.

(8) At § 1209.6(f) the Commission has deleted the requirement that specimens be conditioned "a minimum of 48 hours." The amendment requires conditioning to equilibrium, with a less than 1 (one) per cent change in net weight of the specimen in two consecutive weighings, with a minimum of two hours between each weighing. The Commission believes that these changes should ensure proper conditioning of the specimens.

(9) At § 1209.6(g) (2) and (3) the Commission has specified that the amount of time the pilot burner flame must contact the test specimens be changed from "5 minutes" to "2 minutes". Based on its experience with the test method, the Commission believes that if the specimen is going to ignite it will ignite within the first 2 minutes.

(10) Throughout § 1209.6, the Commission has also made numerous technical nonsubstantive changes such as numbering changes, correction of typographical errors, and the addition of tolerances, to ensure that the amendment is suitable for issuance as a mandatory safety standard.

(11) The Commission has not included figures 1 and 2 of HH–I–515D in the amendment, since these figures, which are photographs of the radiant panel, are not likely to be printed with sufficient clarity. These figures may be seen in the Office of the Secretary of the Commission.

The Commission has included three additional figures: 5, 6, and 7, in the amendment. Figure 5 (proposed as figure 5b) shows the basic component interrelationships of the attic floor radiant panel apparatus and shows the zero reference point related to the detecting plane of the apparatus. Figure 6 (proposed as Figure 7) shows the dummy specimen. Figure 7 (proposed as Figure 8) replaces Figure 6 of HH–I–515D. This drawing provides clarification of the requirements of Section 1209.6(b)(4) which gives the specimen tray dimensions. The Commission has not included Figure 9 of HH–I–515D, which shows the dummy specimen holder and dummy specimen tray, since the dummy specimen holder and dummy specimen tray are shown in Figures 5 and 6.

Test procedures for smoldering combustion (§ 1209.7). The Commission has included the following changes in the amendment concerning the test procedures for smoldering combustion:

(1) At § 1209.7(a)(1) the Commission has specified that the glass fiberboard required as a pad in the test be unfaced. The Commission believes that in order to obtain reproducible results in the test it is necessary to specify a standard substrate on which to place the specimen holder. The insulating medium used in the development of this test method and for the weight loss criterion chosen was unfaced glass fiberboard of the dimensions specified in the amendment. The Commission believes that this change should increase the reproducibility of the test method.

(2) At § 1209.7(b)(1) the Commission has revised the procedure for loading the test specimen into the specimen holder as follows: "The material shall be blown, combed, or otherwise mixed to remove lumps and shall be loaded uniformly into each specimen holder, level and flush to the top of the holder". The purpose of this revision is to provide some assurance that the specimen will be distributed uniformly in the specimen holder. The change should eliminate possible variations in test results that may occur if the material is not distributed uniformly in the specimen holder. The Commission has also revised the procedure for loading the test specimen into the specimen holder to provide for a removable extension top to be placed on top of the holder. This change will increase the height of the sample holder and avoid creating layers of insulation with different densities. The change will avoid the effects on test results of density variations.

(3) At § 1209.7(b)(1) the Commission has added the phrase "whichever period is longer" in order to clarify the duration of the test.

(4) At § 1209.7(b)(2) the Commission has clarified the procedure for determining the net weight of the content of the specimen holder at the conclusion of the test.

(5) At § 1209.7(b)(2) the Commission has changed the provision for allowing the specimen holder to cool down from "25° C" to "approximately room temperature". The Commission believes that this change is consistent with the requirement that the test area be maintained at 21± 3° C, and should not affect test results. The change will make it easier to conduct the test.

(6) At § 1209.7(b)(3) the phrase "Three specimens per sample shall be tested" has been added to the amendment. The Commission has chosen three specimens to be consistent with the critical radiant flux determination. For the critical radiant flux determination, the Commission believes that three specimens are necessary and sufficient for statistical reliability. This change is intended to eliminate confusion as to the number of specimens per sample to be tested.

(7) Throughout § 1209.7 the Commission has also made technical nonsubstantive changes, such as numbering changes, correction of typographical errors, and the addition of tolerances, to ensure that the amendment is suitable for issuance as a mandatory safety standard.

IV. Response to Comments

In response to the proposed amendment to the interim standard (44 FR 12872, March 8, 1979) the Commission received thirty-six timely comments and twelve late comments from manufacturers, trade associations, independent testing laboratories, Federal and State Government agencies, consumers, and other interested persons. These comments are available for inspection in the Office of the Secretary of the Commission. As stated in the proposal (44 FR 12889) the short amount of time provided by statute for considering comments made it impractical for the Commission to formally respond to late received comments. However, the Commission considered all of the late received comments within the limited time available. In some instances, where there was sufficient time to evaluate suggestions made in the late comments, the Commission was able to include suggestions made by the late commentors in the amendment. The short amount of time (30 days) for commenting on the proposed amendment was provided by Section 35(c)(2)(F) of the act. In order to provide additional time for the public to present its views on what action the Commission should take to amend the standard, the Commission published a notice of intent to propose the

amendment on September 6, 1978 that included much of the content of the proposed amendment and that solicited comments on this content. The Commission considered all timely comments before publishing the proposed amendment. The Commission also mailed copies of the proposed amendment to an extensive list of cellulose insulation manufacturers and other interested persons to provide them with direct notice of the proposal and with the greatest possible amount of time to submit comments.

In the Congressional *Conference Report* on Pub. L. 95–319, the conferees stated their expectation that any member of the public who objects to the proposed amendment will make available to the Commission whatever information is necessary in order for the Commission to fully analyze the impact of the amendment (H.R. Rept. No. 95–1322, 95th Cong., 2d Sess. 8 (1978)). As emphasized in the *Conference Report*, the Commission must issue the amendment unless the Commission finds that the amendment is not necessary or will create an undue burden. Many of the commentors raised concerns about the amendment but did not provide substantiation; or requested that the Commission include changes in the amendment without submitting information supporting these changes. However, the Commission attempted to address all of these comments by analyzing information available to it, and, when possible, by conducting tests. However, as indicated in the responses to comments, in many instances the Commission could not independently verify the concerns of the commentors by conducting research or tests to develop the needed information to support the change recommended by the commentor because of the statutory requirement that the Commission issue the amendment within 90 days after the close of the comment period. As a result, the Commission did not include unsubstantiated changes suggested by the commentors. As explained in detail in the response to comments, the Commission believes that all of the major technical issues raised by the commentors have been satisfactorily resolved. If interested persons believe that the amendment should be changed after it is published, these persons may petition the Commission to make these changes in the amendment. Petitions must include information and data that substantiate the suggested changes.

An explanation of the relevant issues raised by the timely comments, along with the Commission's response, is given below:

Settled density. GSA Specification HH–I–515D contains test requirements and procedures for determining settled density. In the amendment, at Section 1209.4, the Commission has included a new test procedure for determining settled density which is called the cyclone-shaker test method. An explanation of the new method for determining settled density and the reasons for the change are stated in the section of this **Federal Register** notice titled: *III. Commission Changes to the Flame Resistance and Corrosiveness Provisions of HH–I–515D.*

In response to the proposed amendment the Commission received the following comments concerning settled density:

One commentor suggested that the Commission include the proposed cyclone-shaker method for determining settled density in the final rule. Another commentor stated that since this new settled density test may not represent actual conditions in a home the test should not be included as part of the amendment.

The Commission agrees with the commentor who recommended that the settled density determination be included in the final rule. Before GSA adopted the 28 day settled density test method specified in HH–I–515D, NBS conducted a series of comparisons analyzing the results of the HH–I–515D settled density test and data obtained by the Canadian Research Council concerning the settled density of cellulose insulation in actual homes. These comparisons showed that the density of cellulose insulation in actual homes approximated the settled density values obtained in the test specified in HH–I–515D. The CPSC engineering laboratory and DOE have conducted comparison tests between the test method of HH–I–515D and the cyclone-shaker test method of the amendment. The tests indicated that there were only minimal differences between results obtained using the two test methods. Therefore, the Commission believes that the cyclone-shaker test method approximates the settled density of insulation installed in homes. In addition, as explained earlier in this notice, the cyclone-shaker test method is less expensive and less time consuming than the test method of HH–I–515D.

One commentor criticized the ability of the apparatus, prescribed at § 1209.4(a), to break up the insulation in the settled density test procedures at section 1209.4(a). According to the commentor, the apparatus is overly complex and unsuitable for use in a laboratory. The commentor expressed doubt whether the proposed apparatus would be effective in breaking up the insulation, and recommended that the Commission include the Thermtron method instead. Another commentor requested that the Commission include the Custom Scientific Instruments model CS204 apparatus (Thermtron method) as an alternate test method for settled density. According to the commentor, there is reasonable correlation between the proposed test method and the Thermtron method for determining settled density. The commentor stated that the CS204 test metod has been developed by two industry task groups and has been subjected to interlaboratory round robins. According to the commentor, excluding the CS204 test method would cause unnecessary economic losses to the companies and organizations currently owning and using the apparatus for the CS204 test method. The commentor stated that the CS204 test method would cost no more than the test method in the proposed amendment.

At § 1209.4(a) the amendment recognizes that persons conducting the settled density test may use devices that produce results that are equivalent to the device specified by the Commission. Although the data submitted by the commentors indicates that the CS204 apparatus produces test results that are equivalent to the results obtained using the apparatus specified in the amendment, the Commission has not verified the data submitted by the commentors. The CS204 apparatus, and other apparatus, could be used if the apparatus produce results that are equivalent to results obtained using the cyclone-shaker apparatus specified in the amendment. However, for purposes of compliance testing, the Commission will use the settled density test procedures specified in the amendment. Based on Commission staff experience in conducting the test, the Commission does not believe that the settled density test procedures at § 1209.4(a) are overly complex or unsuitable for use in a laboratory. The Commission's staff experience also indicates that the apparatus for breaking up the insulation is effective in breaking up the insulation when the intake hose is gently spread over the surface of the insulation and not forced into the insulation. The Commission is aware of data which shows that the apparatus in the amendment may have an effect on the density when the insulation is repeatedly reblown. However, since the test procedures of the amendment only require one blowing, this one blowing should have no effect on test results.

One commentor criticized the replacement of the drop box humidity cycle settled density test in HH–I–515D with the cyclone-shaker test for determining settled density. According to the commentor, the cyclone-shaker overestimates the settled density of cellulose insulation made from pressure refined wood chips. The commentor stated that the test in HH–I–515D produces results that compare closely to the settled densities found in installed insulation. The commentor suggested that the Commission either exempt wood fiber insulation from the cyclone-shaker test or use a factor to correlate settled density obtained using the drop box humidity cycle settled density test with settled density obtained using the cyclone-shaker test method.

The commentor did not submit any data in the comment in support of the allegation concerning the settled density of cellulose insulation made from pressure refined wood chips. Based on its experience in conducting the settled density test of the amendment, the Commission believes that cellulose insulation made from wood fiber can be tested under the test procedure in the amendment. At the present time the Commission does not have data concerning the settled density of wood fiber insulation and the effects of different test methods on the settled density of wood fiber insulation. Because of the lack of sufficient data, the Commission is unable to exempt wood fiber insulation from the cyclone-shaker test of the amendment or recommend a factor to correlate the settled density of wood fiber insulation obtained using the test method in HH–I–515D with settled density obtained using the cyclone-shaker test method. The commentor may petition the Commission to propose a rule including a different method for determining the settled density of wood fiber insulation or a correlation factor for wood fiber insulation. Before the Commission would propose such a rule, however, the Commission must have information substantiating the recommended changes.

One commentor stated that the blower used in the settled density test at § 1209.4 is unsatisfactory for cellulose insulation made with cotton fibers, since this type of cellulose insulation chokes the blower.

Based on its experience in conducting the settled density test specified in the amendment, the Commission believes that cellulose insulation can be tested under the method in the amendment. In testing this type of cellulose insulation, laboratories participating in Commission sponsored round robin tests have not reported any problems with the insulation choking the blower of the test apparatus. The Commission staff experience with testing cellulose insulation made with cotton fibers, as well as other types of insulation, indicates that satisfactory results are obtained if the insulation is fed slowly into the supply hose while taking care to break up lumps.

One commentor recommended that the settled density test procedure at § 1209.4(a)(1) specify a standard four liter laboratory glass beaker to be used as the glass insulation specimen container. According to the commentor, the containers specified in the proposal at § 1209.4(a)(1) are not generally available and would be unnecessarily expensive.

At § 1209.4(a)(1), the Commission has changed the specification for the insulation specimen container to provide a dimension with a tolerance for the distance between the bottom of the cyclone and the top edge of the beaker.

The Commission has also eliminated the requirement that the container be made of glass. Based on its experience in conducting the test, the Commission does not believe that these provisions are necessary or would affect test results. The Commission believes that it is necessary to specify that a straight sided container be used, rather than a laboratory beaker with a flared lip, in order to simplify the calculation of the volume of the container which is used in determining density. The Commission does not have any information, and the commentor has not provided any information, showing that the container specified in the amendment is not generally available or is unnecessarily expensive.

One commentor suggested that the Commission specify the height of the insulation specimen container used in the settled density test procedure at § 1209.4(a)(1). According to the commentor, variations in the height of the container can affect the density of the material in the container. The commentor recommended that the container be 12 inches high, to give a settled depth representative of the depth at which the material might be used.

The Commission has addressed the concern expressed by the commentor by changing the amendment at § 1209.4(a)(1). In order to eliminate any effects of the height of the container or the density of the material in the container, the Commission has changed section 1209.4(a)(1) to specify that the distance between the bottom of the cyclone and the top edge of the beaker is 8.5 cm ± 1.0 cm. The Commission believes that the falling distance of the specimen from the bottom of the cyclone to the top of the beaker can influence test results. The Commission believes that the dimensions specified in the amendment sufficiently address this variable. The commentor has not presented any information and the Commission does not have available any information showing that the height of the container should be specified as 12 inches, in place of the dimension in the amendment.

Several commentors pointed out an error at § 1209.4(a)(5). According to the commentors, the displacement of the shaker unit in the settled density test should be 0.5 inch peak to peak instead of 0.1 inch. One commentor recommended that the section include a procedure for verifying the amplitude of the shaker unit.

The Commission agrees with the commentors and has made appropriate changes at § 1209.4(a)(5) concerning the displacement of the shaker unit. Since there are many different methods for verifying amplitude that are accurate, the Commission does not believe that it is necessary to specify a method in the amendment. Although § 1209.4(a)(5) does not include a procedure for verifying the amplitude of the shaker unit, the Commission believes that persons conducting the test may use any method that they consider satisfactory.

One commentor requested that the Commission substitute the term "designed density" for "settled density" at § 1209.4. The Commission believes that the term "settled density" should be retained at § 1209.4, since "settled density" describes a particular condition of the insulation material measured by the test method.

One commentor stated that the Commission should use the same method for determining settled density that the FTC uses for determining R-value, or thermal resistance. The commentor suggested that once the R-value is established for a product, the R-value should be used for all tests conducted for the product. According to the commentor the Commission's regulations should require one independent testing laboratory to use the certified R-value density test results of another certified independent testing laboratory.

The Commission agrees with the commentor that it would be helpful to manufacturers if the settled density test for R-value (thermal resistance) determination prescribed by the FTC were the same as the settled density test for the flame resistance tests. The

Commission staff has recommended that the FTC allow manufacturers to use the cyclone-shaker test method of the amendment as a method for determining settled density used in R-value determinations. Based on present information the Commission believes that the FTC will allow manufacturers to utilize the same settled density test method for determining R-value that the Commission uses in the amended interim standard. The Commission does not agree with the suggestions of the commentor that the established R-value density should be used in all tests for the product, or that the Commission should require one independent testing laboratory to use the R-value test results of another independent testing laboratory. The R-value density for a material is not an appropriate parameter for all flammability testing. When cellulose insulation is first installed, the density of the insulation is considerably less than when the insulation is settled. For those tests that are density sensitive, the Commission believes that the test should be run at the "worst case" conditions that will be found in the field. The settled density test conditions specified for the flame resistance tests represent the "worst case" conditions that will be found in the field.

Requirements and test procedures for corrosiveness. The amendment includes requirements and test procedures for corrosiveness at § 1209.3(a) and § 1209.5. In response to the proposed amendment, the Commission received the following comments concerning these requirements and procedures:

One commentor stated that the proposed test procedures for corrosiveness were not justified and were not an accurate accelerated test of the end use of the product.

As required by Pub. L. 95–319, the Commission has published proposed test procedures for corrosiveness based on the corrosiveness provisions of HH–I–515D to eliminate or reduce an unreasonable risk of injury to consumers from corrosive cellulose insulation. Based on the Commission staff experience with the corrosiveness tests of the present interim standard and the corrosiveness test of HH–I–515D, the Commission believes that the corrosion test in the amendment does differentiate the corrosive nature of various types of cellulose insulation. Based on presently available information, the Commission believes that the test method is at least as accurate an any other test method.

One commentor stated that the corrosiveness test requires further study since the laboratory test method has no relationship to conditions in the field where insulation is installed. Another commentor questioned the rationale for the corrosion testing, stating that there was a lack of knowledge concerning field experience.

Although there is a lack of information concerning the correlation of field experience to all corrosiveness tests, the Commission staff has had extensive experience with the corrosiveness test of the present interim standard and through NBS has had investigations performed on the corrosion test in the proposed amendment. Based on this experience, the Commission believes that the test method of the amendment will provide a means for rating the potential corrosiveness of different types of cellulose insulation. The Commission believes that the test method in the amendment is superior to the test method in the interim standard since the cleaning procedures are more effective and since the test is less subjective, is of shorter duration, is easier to conduct, and is less expensive than the present test.

One commentor stated that the corrosiveness test procedure is unrealistic since it over represents moisture that is likely to occur in cellulose insulation.

The Commission agrees with the commentor that the corrosiveness test over represents moisture that is likely to occur in cellulose insulation installed in the field. The test does this since it is an accelerated test, as are most tests for corrosiveness. As is normally the case in accelerated tests, including HH–I–515D and other accelerated tests for cellulose insulation, severe conditions are used to allow testing to be completed within a reasonable amount of time. Given the need to use an accelerated test with conditions that are sufficiently severe to enable the test to discriminate between corrosive and non-corrosive insulation, the Commission does not agree with the commentors that the test is unrealistic in the amount of moisture in the insulation specimens.

One commentor supported the proposed amendment with the exception of the corrosiveness test. According to this commentor, the 14 day corrosiveness test of the proposed amendment is meaningless since the most corrosive materials presently being used will not cause holes to appear in metals within 14 days. The commentor suggested that a 28 day test be used instead, in order to provide greater protection to the consumer.

Tests conducted by NBS and GSA indicate that there is good correlation between 14 day corrosion failures and 30 day corrosion failures, Based on this test information, the Commission believes that most insulation that fails the 30 day test method of the present interim standard will also fail the test method of the amendment, so that a longer test period is not necessary to protect consumers. Based on this testing experience, the Commission believes that the test method of the amendment is a meaningful test method.

One commentor questioned the reproducibility and consistency of the corrosiveness test.

Based on both a critique of cellulose insulation corrosiveness tests conducted by NBS and on Commission staff experience with the corrosiveness test procedure, the Commission believes that the changes in the corrosiveness test procedure in the amendment will reduce potential testing variables, thus making the test more reproducible. Information presently available to the Commission does not show that the test is not sufficiently reproducible for use as a mandatory standard. The National Bureau of Standards (NBS) is conducting an interlaboratory study on the corrosiveness test procedure. The results of this study will define the reproducibility of the test. If the results of the NBS study indicate that the test method is not sufficiently reproducible for use as a mandatory standard, or if the the Commission receives other information showing that the test is not sufficiently reproducible, the Commission will consider changes to the test method to provide sufficient reproducibility while maintaining the ability to distinguish between corrosive and non-corrosive insulation.

One commentor stated that the corrosiveness test is too rigid when compared to the existing corrosiveness tests for other types of insulation, especially for the thickness of coupons and the test method.

Insulation materials vary extensively in physical composition and characteristics. These differences may have great effects on the corrosive properties of the insulation, and make it difficult to compare corrosiveness tests for various types of insulation. The Commission believes that extensive additional work would be needed to assess whether the corrosiveness tests for other types of insulation are more representative of a home situation for cellulose insulation than the method specified in the amendment. At the present time, there is insufficient data to assess the predictive and discriminatory

capacities of corrosion tests for other types of insulation when applied to cellulose insulation. The test method in the amendment is based on the test method of HH–I–515D, as provided by the act. The commentor has not supplied information supporting a change to another test method. Presently available data does not justify changing this test method to incorporate a test method for other types of insulation.

One commentor requested that the Commission change the corrosiveness test so that test coupons 0.010 inch thick are tested for 240 hours (30 days). (The amendment at section 1209.5 provides that test coupons that are 0.003 inch thick are tested for 14 days.) The commentor suggests that if the weight loss of the coupons exceeded a specified percent, then the test would be continued for an additional 480 hours to determine the maximum allowable percent of weight loss.

The commentor has suggested a test method that is substantially different from the test method as proposed and included in the final amendment. The commentor has not provided technical substantiation for making these changes. The Commission has no evidence to indicate that the suggested changes are necessary or would result in a more accurate test method, or one that is more closely related to conditions in the field. At the present time there is insufficient data to define the corrosion loss or corrosion rate that would constitute failure in a test method such as the one suggested by the commentor. For these reasons, the Commission has not changed the amendment as suggested by the commentor.

One commentor suggested that a thicker test coupon be required, based on an NBS report that a thicker coupon should be adopted to eliminate improper judgments resulting from mechanical damage to the test coupon. Another commentor stated that using thin foil samples introduces difficulties and errors in conducting the corrosiveness test. The commentor claimed that local creases and stresses are inherent in the samples and cause inaccurate results.

The provision of the amendment for test coupons that are 0.003 inch thick to be tested for 14 days, is based on paragraph 4.8.5 of HH–I–515D. Although the thin coupons provided in the amendment are more difficult to work with than thicker coupons, the Commission does not believe that the thickness of the coupons has caused errors in test results. In addition, to provide more assurance of correct interpretation the Commission has revised the amendment to exclude notches at the edges of the coupons, since these notches may be attributed to the preparation of coupons rather than corrosion of the coupon due to the insulation sample. The NBS report referred to by the commentor did not recommend that a thicker test coupon be used with the corrosiveness test in the amendment. In order to use thicker test coupons, the Commission would be required to develop a different test method for assessing corrosiveness. The Commission does not have any evidence to show that such a test method would be more accurate or better correlated to field experience than the test method of the amendment.

Another commentor suggested that the Commission take steps to eliminate variables caused by obtaining test coupons from diverse sources.

Test coupons from different sources may have different surface residues present that may cause variables in corrosion results. The Commission has controlled variables that may be associated with residues on the coupons by providing flexibility in the method for cleaning the coupons. Based on its experience with these cleaning procedures, the Commission believes that the cleaning procedures in the amendment issued here are sufficient to address the differences due to residues on the coupons as a result of the manufacturing process. In order to further eliminate the possibility of variables, the Commission is also investigating the possibility that NBS could provide standard coupons for comparison with coupons obtained from other sources. However, if NBS does not provide standard coupons, the Commission believes that the provisions of the amendment for cleaning the coupons and assessing corrosiveness are sufficient to control variables that may be associated with the coupons.

One commentor suggested that the Commission specify a more realistic construction material than steel for one type of coupon at § 1209.5(a)(3)(iii) the corrosiveness test, since cold rolled steel is not commonly used as a construction material. The commentor suggested that the Commission require one type of coupon to be made of galvanized iron.

Although galvanized iron may be a more commonly used construction material than cold rolled steel, based on its experience in obtaining coupons for the test, the Commission believes that it may be difficult to obtain thin coupons of consistent quality made of galvanized iron. In developing HH–I–515D, GSA did not include galvanized iron coupons based on information showing that if galvanized iron coupons failed, the cold rolled steel coupons also failed. At the present time the Commission does not have sufficient information to change the provision in the test to delete steel coupons or to include galvanized iron coupons.

Two commentors stated that the proposed procedures for preparing and cleaning the metal coupons are complicated, extreme, impractical and unnecessary. Accordingly to one commentor, it may not be essential to remove all lubrication from the metal coupons since metal items likely to contact insulation in the field are manufacturing with a lubricated die process. The commentor suggested that washing the coupons with a mild detergent is sufficient to clean the coupons.

One commentor expressed concern that using caustic acid substances to preclean metal coupons could lead to problems in judging the extent of corrosion if these caustic acid substances are not completely removed before the corrosion test is conducted. The commentor suggested that a different cleaning method be used than the one in the proposed amendment. According to the commentor, metallographic powder used with solvent cleaning removes contaminants from the metals without causing the metals to become work-hardened, as suggested by some persons. The commentor stated that the cleaning procedures in the proposed amendment would take considerable time and would increase costs.

The Commission agrees with the commentors that the cleaning procedures in the proposed amendment should be revised. Recent data obtained using the cleaning procedures in the proposed amendment have shown that the proposed procedures may be inadequate with coupons from diverse suppliers. At § 1209.5(b)(1)(vii) the Commission has revised the pre-cleaning procedures to provide for cleaning by vapor degreasing with 1,1,1-trichloroethane for ten minutes followed by caustic and/or detergent washing as appropriate, followed by rinsing in water to obtain a water break-free surface.

Since corrosion is a phenomenon associated with the material and its environment, the Commission believes that cleanliness is an essential part of the corrosion testing procedure. Due to variability in contaminants or surface oils which may be present on coupons from diverse suppliers, the Commission has included in the amendment a more general cleaning procedure based on

recommendations of NBS, DOE contractors, and interested persons. The Commission believes that these changes will simplify the process for pre-cleaning the test coupons.

At the present time the Commission has not adopted the suggestion of one commentor that the amendment require cleaning using a metallographic powder.

The commentor has not presented information, and the Commission has no information establishing that the suggested method would not cause the test coupons to become work hardened. If work hardening occurs, corrosion may be accelerated, and may not accurately reflect the corrosive potential of the insulation.

One commentor stated that hot refluxed 1,1,1–trichloroethane (TCE) is sufficient to clean the test coupons in the corrosiveness test.

Studies performed in the Commission laboratories, and information supplied by NBS and DOE have shown that 1,1,1–trichloroethane is not adequate to consistently allow coupons to meet the water break-free criteria. The amendment, at section 1209.5(b)(1)(vii), provides for vapor degreasing with 1,1,1–trichloroethane followed by caustic and/or detergent washing as appropriate. The Commission believes that these procedures will be sufficient to allow the coupons to meet the water break-free criteria. The amendment at § 1209.5(b)(1)(vii) requires test coupons to meet the water break-free criteria, as specified in HH–I–515D.

One commentor agreed with the Commission's proposal to delete the nitric acid cleaning agent required in HH–I–515D, and stated that a single cleaning agent could be used to prepare all three types of coupons. According to the commentor, the test procedure at the end of the 14 day test should provide for one single cleaning agent or procedure. The commentor stated that simplification of the proposed preparation and cleaning procedure would greatly enhnce the reproducibility of results.

At § 1209.5(b)(6)(i), the amendment provides that a single cleaning procedure involving electrolytic cleaning may be used to post clean all three types of coupons. However, since some laboratories may not have access to electrolytic cleaning equipment, the Commission has included in the amendment the proposed alternate methods for post cleaning the coupons. These procedures are based on the recommended practice described in ASTM G–I. The Commission believes that all of these procedures provide acceptable results.

One commentor stated that cleaning coupons after the corrosiveness test is not nearly as important as cleaning the coupons before the test.

Although the Commission agrees with the commentor that cleaning coupons before the corrosiveness test may be more important than cleaning the coupons after the test, the Commission believes that post cleaning is important and should be included in the amendment. In cleaning the coupons after the test, it is essential that removal of intact metal be held to a minimum to prevent perforations which can result from the cleaning rather than from corrosion that may have occurred during the 14 day test period.

One commentor stated that when placing the coupons in the crystallizing dish, the person conducting the test must be careful to avoid air pockets, since air pockets will accelerate corrosion.

The Commission agrees with the Commentor. At § 1209.5(b)(4) the Commission has included an instruction in the test procedure so that persons conducting the test will exercise care in preparing the composite specimens to eliminate air pockets from forming next to the metal coupons.

One commentor stated that the determination of settled density at Section 1209.4 is unrelated to the corrosiveness test since the amount of distilled water for the test must be in proportion to the weight, rather than the volume, of the sample. According to the commentor, after saturating the sample with water and tamping it, the density of the sample loses its significance. Another commentor stated that the settled density determination should be eliminated since it is slowing down and causing confusion in the testing of the product.

The Commission believes that the settled density test for determining the amount of water used for saturation is desirable since the calculation based on the settled density determination will result in more uniform specimens. Calculating the amount of water based on the settled density allows for more uniformly saturated samples. Thus after the cacluated amount of water is added to insulation of high settled density, this insulation would have approximately the same consistency as an insulation specimen with a low settled density. At this time, the Commission does not believe that there is enough data to justify deleting the settled density test for determining the amount of water used for saturation. The Commission does not believe that the test is confusing since it involves a simple multiplication of a constant by 75 and division by the determined settled density.

One commentor questioned the requirement that a forced air humidity chamber should be used in the corrosiveness test, since an NBS report stated that more work needed to be done on the efficiency of the humidty chamber and since the Commission staff had recognized problems with positioning samples within humidity chambers. Several commentors agreed with the inclusion of the forced air humidity chamber in the corrosiveness test at § 1209.5(a)(1).

One commentor claimed that variability of corrosiveness test results is due primarily to variability of relative humidity above the saturated test specimen. According to the commentor, this variability can be greatly reduced by using a saturated solution of potassium sulfate in a closed system (instead of the forced air humidity chamber) to control the relative humidity at exactly 96%. The commentor submitted specific recommendations to improve the reproducibility of the corrosiveness test by eliminating environmental variables.

The Commission has specified the use of a forced air humidity chamber in the amendment to reduce variation in water loss experienced in different laboratories that may use static or individual sealed systems. Based on the Commission staff experience with the test method of the present interim standard, which uses a forced air humidity chamber, and Commission staff experience with the forced air humidity chamber, as proposed in the amendment, the Commission believes that the test method in the amendment is reproducible among different laboratories. The occurrence of evaporation in the forced air humidity cabinet also allows corrosion to occur in the presence of oxygen, which is the condition found in field use. The use of static chambers or individual sealed systems has been suggested only recently for use as a replacement for the forced air humidity chamber based on HH–I–515D. The data available with the use of such systems is limited to only a few select cellulosic fiber flame retardant chemical combinations. The Commission believes that further investigation of non-forced air humidity chambers is necessary to evaluate the desirability of these method sand their ability to discriminate between corrosive and non-corrosive insulation.

In a meeting with the Commission staff on May 22, 1979, after the close of the comment period, several persons have questioned the reproducibility of

the corrosiveness test, based on the use of the forced air humidity chamber and the specification that the chamber be capable of maintaining 48.9± 7°C (120± 3°F) and 97±1.5 percent relative humidity. According to these persons, forced air humidity chambers are not capable of consistently maintaining these temperature and humidity conditions throughout the test. These persons have claimed that this inability adversely affects the reproducibility of the corrosiveness test, and have recommended that the Commission use a sealed container instead of the forced air humidity chamber.

The Commission has had tests conducted by the equipment manufacturer on the forced air humidity chamber in the Commission's Chicago Laboratory. These tests show that forced air humidity chambers, which are commercially available, are able to maintain the specified temperature and humidity conditions throughout the test.

At the present time the Commission does not have sufficient information to require the use of a sealed container in the corrosion testing provisions of the amendment. The Commission believes that the adoption of a sealed container test method would represent a substantial change in the corrosion testing method provided in HH–I–515D and the proposed amendment and would raise several important questions. First, the sealed container test does not simulate actual conditions within an attic or wall of a building where thermal insulation becomes wet by condensation of water vapor or by leaks and then gradually dries out. The sealed container approach minimizes moisture losses by insulation test specimens, similar to a situation where a building structure does not dry out. Second, the sealed container system uses a saturated salt solution to maintain the relative humidity at 97±1.5 percent. However, procedures need to be developed for preparing the salt solution and for ensuring that the desired relative humidity is maintained. Third, the sealed system test method appears to be less severe than the present test method. In preliminary tests conducted by NBS using the sealed container test method, much less corrosion took place in 14 days than when the specimens were tested in a forced air humidity chamber, even when a very corrosive type of cellulose insulation was tested. Fourth, before the sealed system test could be adopted as part of a mandatory standard, the Commission believes that moisture or water loss associated with using a sealed container should be evaluated, along with the reproducibility of corrosion results, and uniformity of humidity adjacent to the test specimen.

Since the Commission must issue a final amendment by July 6, 1979, the Commission does not have sufficient time to conduct research and testing to address these issues concerning the suggested change. Based on available information, the Commission believes that the corrosiveness requirements and test procedures of the amendment are appropriate and sufficiently reproducible for use as a mandatory standard.

Interested persons who believe that the Commission should change the amendment to include a sealed container may petition the Commission to propose a rule including such a change. Before the Commission could propose such a rule, the Commission must have technical substantiation for the rule that adresses the questions discussed above concerning the sealed container. Interested persons must include such substantiation and a technical rationale in their petition.

To provide clear guidance for persons who may have questions about the reproducibility of the corrosiveness test, the Commission has asked its staff to explore whether it should specify additional procedures to improve the reproducibility of the test apparatus specified in the amendment. If so, the Commission staff will include these procedures in the test manual that the Commission staff will use for compliance test purposes. This test manual would also be made available to the public to provide information on the procedure the Commission uses in compliance testing.

Therefore, in addition to the fact that the Commission believes its prescribed test is appropriate and sufficiently reproducible for use as a mandatory standard, the Commission has insufficient information at the present time to require that the corrosiveness test at Section 1209.5 of the amendment be changed to require the sealed container test method.

One commenter supported the proposed corrosiveness test procedures at section 1209.5. The commenter suggested that the exclusion of 1 mm notches in determining corrosiveness as specified at § 1209.5(c) should be changed to exclude 3–4 mm notches in order to more accurately account for any stress from the edges of the coupon.

The Commission agrees with the commentor that the 1 mm notch exclusion should be increased. Based on its experience with testing under the present interim standard, the Commission believes that when notches or perforations are present at depths greater than 3 mm there are generally perforations in the interior areas of the coupon indicating a test failure. The purpose of excluding 3 mm notches as a criteria for failure is to take into account localized corrosion caused by coupon preparation, rather than corrosion from the test specimens. Therefore, the Commission has changed § 1209.5(c) to exclude notches that extend into the coupon 3 mm or less from any edge.

Several commentors expressed concern that the corrosiveness test procedure of the proposed amendment does not include "control" samples and recommended that the Commission adopt controls as part of the test procedure. According to one commentor, the control samples could remove subjectivity, ambiguity, inconclusiveness, and false positives or false negatives in test results. One commentor suggested that the Commission include control coupons in the corrosion test to address variables such as distilled water, oxygen, and the poor quality of the test coupons. Another commentor claimed that the proposed amendment, with the use of experimental controls, would remove the subjectivity inherent in the corrosiveness test of the present interim standard, which requires a subjective evaluation of the test coupons after 7 days of testing before conducting extended 30 day testing. According to the commentor, the 14 day test in the proposed amendment is more useful in gaining a more reasonable assessment of corrosiveness than the test procedure of the present interim standard.

The present interim standard requires the use of coupons for a subjective evaluation of the coupons at 7 days to determine the need for 30 day testing. The amendment based on HH–I–515D does not include a subjective evaluation of the coupons at 7 days, but instead bases the pass-fail criteria only on the presence or absence of perforations at the end of 14 days exposure. The Commission has no information that would indicate that control coupons are needed to address variables such as distilled water, oxygen, or the poor quality of test coupons. Since the use of control coupons would introduce subjectivity into the test method by requiring a subjective comparison between the control coupon and the test coupon, the Commission does not believe that control coupons should be included in the amendment.

One commentor disagreed with the Commission that perforation of metal coupons after the 14 day test should be the method for assessing corrosiveness.

According to the commentor, the most meaningful expression of corrosion data is a corrosion rate including units of weight, time, and depth of penetration per unit of time.

The commentor did not provide any evidence, and the Commission does not have evidence indicating that a method for evaluating corrosiveness based on the rate of corrosion is a more representative, repeatable, reproducible, or satisfactory method for evaluating corrosiveness than the criteria in the amendment. Changing the amendment to judge corrosion based on rates of corrosion would require the development of a totally new test method. The Commission has no information to indicate that such a test method would better correlate to field experience than the test method of the amendment. As a result, the Commission has not included in the amendment a method for evaluating corrosiveness based on the rate of corrosion.

One commentor claimed that the corrosiveness test procedure at § 1209.5(a)(3) contains an error in the description of the steel coupon, since no commercial steel contains 30 percent carbon. The commentor suggested that this section reference a specific type of steel with the proper carbon limits.

The Commission agrees with the commentors, and has included an appropriate change in the amendment.

Several commentors referred to a typographical error in describing the thickness dimension of the test coupons for the corrosiveness test at § 1209.5(a)(3). One commentor stated that the coupon thickness should be 0.003 in. instead of 0.0003 in.

The Commission agrees with the commentor, and has included an appropriate change at § 1209.5(a)(3).

One commentor stated that the chemicals used in the corrosiveness test could be described as Reagent rather than certified ACS Reagent at 1209.5(b)(1)(C).

The Commission agrees with the commentor and has made the appropriate change.

Several commentors suggested that the Commission prohibit manufacturers from using, as flame retardants, corrosive chemicals, such as aluminum sulfates, ammonium sulfates, aluminum trihydrates, gypsum, and copper sulfates. Another commentor claimed that there is no correlation between the use of pH of flame retardants present and the corrosive potential of insulation as measured by corrosion under either the 14 day or 30 day corrosiveness tests.

One commentor questioned whether commercial chemical premixes would be adequate to meet the requirements of the proposed amendment, since the premixes are corrosive. The commentor suggested that the Commission prohibit commercial premixes.

The Commission does not believe that it is necessary to prohibit the use of specific chemicals or commercial premixes, since the amendment includes performance requirements for corrosiveness. Cellulose insulation products that fail to meet these requirements would violate the standard. The Commission believes that attempting to prohibit the use of certain chemicals or certain combinations of chemicals would be impractical because of the many possible chemicals and combinations of chemicals that could be used to treat cellulose insulation, and would unduly restrict manufacturers of cellulose insulation in formulating their products.

Requirements and test procedures for critical radiant flux. The amendment, at § 1209.6, includes test procedures for critical radiant flux based on the test procedures at paragraph 4.8.7 of HH–I–515D. Section 1209.3(b) of the amendment requires cellulose insulation to have a critical radiant flux equal to or greater than 0.12 W/cm2 for each of the three specimens when tested in accordance with the test procedures. In response to the proposed amendment, the Commission has received the following comments on the requirements and test procedures for critical radiant flux:

One commentor criticized the attic floor radiant panel test for assessing the ability of cellulose insulation to ignite under conditions that are more severe than the real ambient condition in a heated attic, but less severe than the conditions where the consumer needs the most protection. Another commentor stated that the requirement in the attic floor radiant panel test that materials have a critical radiant flux equal to or greater than 0.12W/cm2 is unnecessarily restrictive.

The Commission does not agree with the commentors.

Cellulose insulation is commonly installed on attic floors. Most of the available fire incident data concerning cellulose insulation involves cellulose insulation installed in attics. The attic floor radiant panel test with a pass-fail criterion of 0.12W/cm2 simulates the exposure of insulation materials to a small attic fire under 71°C(160°F) air temperature conditions, which represent conditions that have been demonstrated by NBS to be worst case summer attic conditions, with an added safety factor. Insulation that can perform well under these worst case conditions will continue to perform well under less severe exposures. The attic floor radiant panel test is unlike conditions in an attic since the test exposes the insulation specimen to varying amounts of radiant energy to determine the fire performance of the insulation. However, there is no data to show that the fire performance of insulation is affected by this difference. Studies conducted by NBS show that in spite of this difference, the pass-fail criteria of the test approximates the energy flux level on the insulation under real life conditions with a 50 percent safety factor added. The Commission believes that the attic floor radiant panel test method adequately determines the ability of cellulose insulation to ignite under conditions presenting a risk of injury to the consumer.

The commentor who claimed that the attic floor radiant panel test does not represent conditions where the consumer needs the most protection did not explicitly state these conditions. However, the comment could be interpreted as referring to conditions where a fire starts within the living space and large flames spread to the attic. The attic floor radiant panel test is also applicable to situations where a fire starts within the living space and large flames spread to the attic. If the insulation has a critical radiant flux rating of 0.12W/cm2 or greater (meeting the requirements of the amendment). The insulation will not allow flames to spread from the area where penetration of the attic space occurred until the heat flux to the insulation surface exceeds 0.12W/cm2

The commentors have not presented any information showing that there is a need to decrease the minimum permissible critical radiant flux criteria of 0.12W/cm2, or that this requirement presents an undue burden on persons subject to the standard.

Several commentors stated that the attic floor radiant panel test has not been shown to relate to field experience or to full scale attic fire performance of cellulose materials. One commentor stated that the attic floor radiant panel test has not been shown to measure the potential for flame propagation during the incipient and developing stages of attic fires involving insulation. The same commentor stated that studies conducted at Underwriters Laboratories show that the results of the attic floor radiant panel test do not always indicate the performance of insulation materials in attic fires. According to the

commentor, the same studies have shown that the flame spread classification in the Steiner tunnel test method of the present interim standard represents the performance of insulation in all of the attic floor radiant panel test should not be substituted for the Steiner tunnel test method of the present interim standard until data are developed that correlate the attic floor radiant panel test, the Steiner tunnel test, and full scale attic simulations on the same cellulose materials.

The attic floor radiant panel test is a relatively new test, as applied to insulation. The Commission recognizes that field experience relative to the attic floor radiant panel test is limited, since manufacturers have only recently begun to evaluate their materials under the test within the past year.

Information available to the Commission indicates that the attic floor radiant panel test method measures the resistance to surface burning under realistic conditions and determines the minimum critical radiant flux necessary for flame propagation during the developing phase of an attic fire. Studies conducted by NBS show that the attic floor radiant panel test determines whether a small fire will spread under summer attic conditions of 71°C attic air temperature. The Commission has examined the U.L. studies referred to by the commentor. In these tests, U.L. conducted attic experiments at 70°F, 135°F, and 160°F and compared the fire performance of cellulose insulation samples with Steiner tunnel flame spread classifications of 25, 35, and 55 and corresponding critical radiant flux criteria of 0.16<0.10, and<0.10W/cm2. U.L. observed that the tests demonstrated that the Steiner tunnel was able to distinguish materials that did or did not propagate flames in the range of attic temperatures used. U.L. also observed that since the attic floor radiant panel test is not able to measure critical radiant flux less than 0.10W/cm2, the attic floor radiant panel test was not able to consistently predict which material did or did not propagate flames. From these observations, U.L. concluded that the substitution of the attic floor radiant panel for the Steiner tunnel test is not justified for attic ambient temperatures up to at least 160°F. The Commission does not agree with the commentor that the U.L. studies show that the attic floor radiant panel is not able to distinguish insulation that will or will not propagate flames under full-scale attic experiments. The attic floor radiant panel test was developed to assess the fire performance of cellulose insulation under likely summer attic conditions for attic insulation, where cellulose insulation is exposed to a small attic fire under 71°C (160°F) air temperature conditions. For this reason, the Commission believes that the most relevant fire tests from the data presented are those conducted at 71°C air temperatures, representing the worst case conditions for the attic insulation. In the tests conducted by U.L. at this temperature, all of the materials rated with a passing critical radiant flux at or above 0.12W/cm2 did not propagate flame in the attic, indicating that the attic floor radiant panel test is at least as capable as the Steiner tunnel test of distinguishing materials that propagate flames in attic fire tests. NBS has conducted large scale attic fire tests to determine if flame would propagate over the surface of cellulose insulation installed over the attic floor under simulated summer attic conditions. These tests show that the attic floor radiant panel test consistently predicted the fire performance of cellulose insulation under summer conditions in a large scale attic test.

One commentor stated that it is wrong to infer that the attic floor radiant panel test is suitable for insulation from the fact that during the development of the test procedure, the attic floor radiant panel test was shown to relate to full scale corridor fire tests representing later-stage fully developed fire conditions. The commentor stated that the limited and incomplete comparative full scale testing at NBS provides an insufficient data base to justify the use of the test for cellulose insulation.

The Commission agrees with the commentor that the historical development of the attic floor radiant panel test does not in itself mean that the test is suitable for assessing the fire performance characteristics of cellulose insulation. However, the rationale for applying the test to cellulose insulation is not based solely on the historical development of the test. Instead, this rationale was developed by NBS after extensive testing of cellulose insulation and an evaluation of the ability of the test to represent the worst case conditions under which cellulose insulation installed in attics may be ignited.

The attic floor radiant panel test provides a good simulation to predict if flame from a small ignition source will propagate over the surface of insulation material under summer attic conditions of 71°C attic air temperature. Since the attic floor radiant panel test is a good simulation of actual attic conditions, far fewer comparative full scale tests need to be performed to verify the reliance of the attic floor radiant panel test than are necessary to verify the applicability of a test such as the Steiner tunnel test. The Steiner tunnel test has many provisions which are substantially different from attic conditions where cellulose insulation is commonly installed. Therefore, the Steiner tunnel test depends entirely on correlation with full scale data for its application to cellulose insulation.

In the case of the Steiner tunnel test, some comparison testing between a full scale simulated attic and the Steiner tunnel was only recently initiated. This study, using data from only one Steiner tunnel apparatus does not show that the Steiner tunnel test is a better simulation of actual attic conditions than the attic floor radiant panel test.

One commentor claimed that the attic floor radiant panel test has a serious shortcoming since the test does not allow persons conducting the test to evaluate the extent to which failing materials fail the test. According to the commentor, this occurs since the calibration of the test apparatus compresses the test results on all materials to a very narrow range at the end of the test specimen. The commentor claimed that the attic floor radiant panel test, unlike the Steiner tunnel test, is not able to show trends or shifts in data concerning flame resistance. According to the commentor, if the attic floor radiant panel test method were adopted, the Commission would not be able to assess improvements in flame resistance characteristics of products over a period of time.

The Commission agrees with the commentor that because of the calibration of the attic floor radiant panel, the test is less capable than the Steiner tunnel test of evaluating the extent to which failing materials fail the test. Although the Commission does not agree with the commentor that this is a serious shortcoming in the test, the Commission staff is continuing to examine methods of recalibrating the test apparatus to show degrees of failure. The Commission staff may include a recalibration in a compliance test manual that would be publicly available, if there is sufficient technical substantiation for the recalibration.

The Commission does not believe it is critical that the attic floor radiant panel test be able to show the extent to which material having unacceptable flammability performance characteristics fails the test, since this material, having a critical radiant flux of less than 0.12 W/cm2 is in violation of the standard. Based on its experience

with the attic floor radiant panel test method and studies conducted by NBS concerning the test method, the Commission believes that the attic floor radiant panel test accurately identifies unsafe cellulose insulation materials and provides a relative performance measurement for acceptable materials. Available information shows that the attic floor radiant panel test is better able than the Steiner tunnel test to represent improvements in the fire resistant qualities of insulation that meets or exceeds the minimum acceptable level. The information presented by the commentor does not indicate that the Steiner tunnel test is better able than the attic floor radiant panel test to show the extent to which cellulose insulation materials exceed minimum flammability requirements, since all of the materials tested by the commentor had a flame spread classification equal to 25, the maximum permissible flame spread classification under the present interim standard. Although the Steiner tunnel test data from January 1976 through December 1978 has shown the "shift" or "trend" of declining flame spread classifications from approximately unacceptable flame spread classifications of "40" to acceptable flame spread classifications of "25", this shift or trend has been from unsatisfactory performance to borderline acceptable performance. Based on available information, the Commission believes that the attic floor radiant panel test will be better able than the Steiner tunnel test to show future improvements in the quality of insulation above the minimum acceptable performance level.

One commentor questioned the reproducibility of the attic floor radiant panel test, claiming that since results under the test would vary among laboratories the test is unsuitable for use as a mandatory standard. The commentor criticized the Commission's conclusions in the preamble to the proposed amendment that the test is reproducible, and criticized the Commission's interpretation of the round-robin test data concerning reproducibility. The commentor stated that in analyzing the test data concerning reproducibility the Commission should not have excluded data for a certain sample of insulation (material B) from the test results. The commentor also stated that the results of the round-robin testing program to determine the repeatability and reproducibility of the Steiner tunnel test should be compared with the round-robin testing program for the attic floor radiant panel test before the attic floor radiant panel test is adopted.

Information available to the Commission indicates that the attic floor radiant panel test method is sufficiently precise and reproducible for use as a mandatory standard. The commentor has not presented any data demonstrating that the Steiner tunnel test of the present interim standard is more reproducible than the attic floor radiant panel test. In fact, round-robin testing of cellulose insulation materials by NBS indicates that the reproducibility of the attic floor radiant panel test is superior to that of the Steiner tunnel test.

NBS is presently preparing a report on the tunnel round-robin testing. A preliminary comparison of data from this round-robin testing with data collected in the previous round-robin evaluation of the attic floor radiant panel test (Lawson, NBSIR 78–1588) shows that the attic floor radiant panel test has better repeatability and reproducibility than the Steiner tunnel test, and is adequately reproducible for us as a mandatory standard. For purposes of comparison, data presently available shows that the coefficient of variation for reproducibility, for testing treated commerical materials was 20.5% for the attic floor radiant panel test and 35.2% for the Steiner tunnel test. If untreated materials are included in the analysis of the Steiner tunnel test the coefficient of variation for reproducibility increases to 42.3%, or a variation twice as great as that of the attic floor radiant panel test. Based on presently available information, the Commission believes that the attic floor radiant panel test is significantly more reproducible than the Steiner tunnel test. In analyzing the round-robin test data concerning reproducibility, the Commission excluded data for a certain sample of insulation (material B), since the data were reported as failing test results having a critical radiant flux in a range of less than 0.12 W/cm2. The Commission excluded these data from the computation of reproducibility since the Commission would have had to arbitrarily assign a test value to the data in order to perform the statistical analysis. The Commission does not believe, and the commentor has not presented any information showing that the exclusion of this insulation sample from the statistical computation has affected the assessment of reproducibility for the attic floor radiant panel test.

Several commentors stated that the attic floor radiant panel test should not be substituted for the Steiner tunnel test method of the present interim standard. According to one commentor, although the attic floor radiant panel test evaluates cellulose insulation in a situation that more closely approximates real life than the Steiner tunnel, the fire safety of the insulation is related to the extent to which the insulation will support flamming combustion, a factor which is better assessed by the Steiner tunnel test. According to the commentor, the Steiner tunnel is a reasonably accurate means of determining the relative fire safety properties of cellulose insulation. The commentor stated that requiring the attic floor radiant panel test would create an unnecessary additional burden without serving any purpose in terms of consumer safety. Several commentors stated that as an alternative to eliminating the attic floor radiant panel test, the Commission should require cellulose insulation to have either a flame spread of 25 of less (as measured by the Steiner tunnel test), or a critical radiant flux equal to or greater than 0.12 W/cm2. One commentor requested the Commission to allow manufacturers to sell cellulose insulation with a flame spread classification of 50 or under when tested in the Steiner tunnel test method of the interim standard based on GSA Specification HH–I–515C. Another commentor requested the Commission to maintain the Steiner tunnel test of the present interim standard if the Commission adopts the attic floor radiant panel test method of the proposed amendment. According to the commentor, it is essential that sole dependence for fire safety not be placed on the radiant panel and smoldering combustion tests, since these tests are new and have limited field experience applicable to them, unlike the Steiner tunnel test.

The Commission does not agree with the suggestion of the commentors that the Steiner tunnel test should be retained in the interim standard either alone or in conjunction with the tests in the amendment. Based on available data concerning fire incidents associated with cellulose insulation, the major concern in evaluating the fire hazard presented by attic insulation is the ability to determine whether the insulation will allow flame to spread from a point of accidental ignition. By including the attic floor radiant panel test in the amendment, the Commission will ensure that insulation materials will resist flame spread up to a minimum of 0.12 W/cm2 heat flux applied externally to the surface. This provision ensures that no flame spread will occur from

small fires in the attic even under hot attic conditions, which are likely conditions of exposure for cellulose insulation. As indicated by one of the commentors, the attic floor radiant panel test evaluates materials under conditions that more closely approximately real life conditions than the Steiner tunnel test. On the other hand, the Steiner tunnel test does not attempt to simulate in any way the expected fire exposure conditions in an insulated attic space. The Commission believes that fire tests, such as the attic floor radiant panel test, that provide a good simulation of expected fire conditions are more reliable predictors of materials performances. In addition, in round-robin testing of cellulose insulation materials conducted by NBS, the reproducibility of the attic floor radiant panel test has been shown to be superior to that of the Steiner tunnel test, indicating that the attic floor radiant panel test provides a more consistent means of evaluating the fire performance of insulation materials than does the Steiner tunnel test. The commentors have not presented any information showing that the Steiner tunnel test would provided a greater degree of flammability protection than the attic floor radiant panel test, and have not shown that including the attic floor radiant panel test would present an undue burden on persons subject to the interim standard. Information available to the Commission indicates that the attic floor radiant panel test would not create an undue burden on persons subject to the test and is necessary to protect the public. The Commission does not believe that it is advisable to retain the Steiner tunnel test as an alternative to the attic floor radiant test since available information shows that the attic floor radiant panel test is a superior test for evaluating the fire performance of attic insulation. Only limited data exists to support the relationship between a flame spread classification of 25 or under obtained in the Steiner tunnel test and fire resistance of cellulose insulation in an attic space. As a result, classification of materials by the Steiner tunnel test is not meaningful for attic insulations. If the Steiner tunnel test were retained the Commission does not believe it would be advisable to allow manufacturers to sell cellulose insulation with a flame spread classification of 50 or under, as suggested by one of the commentors. The present interim standard requires cellulose insulation to have a flame spread classification of 25 or under when tested in the Steiner tunnel. Since flame spread classifications for untreated cellulose insulation materials have been measured at between 50 and 60, raising the maximum permissible flame spread classification to 50 would significantly lessen the flame resistance protection under the interim standard.

For these reasons, the Commission does not believe that the Steiner tunnel test should be retained in the interim standard for cellulose insulation.

One commentor stated that since the amendment requires each of three samples to have a critical radiant flux greater than 0.12 W/cm2, manufacturers would be required to design their product so that it would have a critical radiant flux of at least 0.22 W/cm2 in order to be certain of passing the test. According to the commentor, this action is required because the test has an average coefficient of reproducibility of 21 percent. To alleviate this problem, the commentor recommended that the Commission allow a tolerance on the 0.12 W/cm2 requirement and define standard test samples to assist in the calibration of test apparatus throughout the country.

As demonstrated in the round-robin test conducted by NBS (Lawson, NBSIR 79–1588), variations in test results conducted under the attic floor radiant panel test are related to the specific cellulose insulation tested. Different brands or lots of cellulose insulation can produce different levels of variation in test results. Because of this, it is not possible to establish a consistent minus tolerance limit on the requirement that materials have a critical radiant flux of 0.12 W/cm^2 or greater. The commentor has not shown that it is possible to establish such a tolerance on the critical radiant flux requirement of 0.12 W/cm^2 or greater. Based on available information, the Commission believes that the value of 0.12 W/cm^2 should be the lowest acceptable value. The Commission also does not believe it is desirable to rely on standard test samples to assist in the calibration of the test apparatus throughout the country, since any one standard test material can only provide a calibration check at one point of the flux profile.

One commentor criticized the attic floor radiant panel test for not including a provision to address the generation of smoke by cellulose insulation.

The present interim standard does not include the smoke generation provisions of the Steiner tunnel test method incorporated in GSA Specification HH–I–515C. As explained in the **Federal Register** notice issuing the present interim standard, the Commission does not believe that the smoke developed rating is part of the requirements for flame resistance or corrosiveness in GSA Specification HH–I–515C (43 FR 35242, August 8, 1978). Similarly, the Commission has not included the smoke developed rating in the amendment issued here since it is not part of the flame resistance or corrosiveness provisions of HH–I–515D. The attic floor radiant panel test method also does not include a provision addressing smoke generation because information presently available to the Commission does not indicate that there is a need for such a provision or that there is a relationship between measurements for smoke density and flame resistance. The commentor has not presented information showing that such a test requirement is needed and has not demonstrated that there is a satisfactory test method for addressing the generation of smoke by cellulose insulation. The smoke developed rating measurement of ASTM E–84 included in GSA Specification HH–I–515C does not necessarily establish a relationship between the density of smoke and its lethality. For example, although low levels of particulate matter may be detected from the combustion of some materials, giving a passing smoke development rating, the level of CO gas may be high. A frequently stated cause of death associated with fires is smoke inhalation of toxic gases, such as CO.

Several commentors questioned the applicability of the attic floor radiant panel test to cellulose insulation installed in side walls. One commentor asked the Commission to eliminate the radiant panel test method since the radiant panel is not relevant to testing insulation installed in side walls. Another commentor stated that the proposed amendment does not adequately address the flammability characteristics of cellulose insulation installed in the walls of a building. According to the commentor, the attic floor radiant panel test has no proven relationship to the fire behavior characteristics of wall insulation and represents a different type of ignition than the smoldering combustion test in § 1209.7 of the amendment. The commentor stated that applying the attic floor radiant panel test to cellulose insulation installed in walls could mislead the consumer in believing that the amendment provides flame resistance protection for cellulose insulation installed in walls.

The attic floor radiant panel test method was developed to address the fire performance of cellulose insulation installed on attic floors, the most common end use of the product and the most common location of cellulose

insulation involved in fire incidents. The attic floor radiant panel test is designed to characterize the ability of cellulose insulation materials installed on attic floors to ignite and propagate flames, and is a relevant simulation of possible fire conditions in an attic. Although the attic floor radiant panel test method has not been shown to be applicable to fire hazards associated with cellulose insulation installed in locations other than attics, the smoldering combustion test method, another flame resistance test method in the amendment, is applicable to cellulose insulation installed in locations other than attics. The smoldering combustion test method is applicable to cellulose insulation installed in wall spaces and other vertical configurations, as well as insulation installed in attics and other locations. The Commission is not aware of any other flame resistance test method that would be appropriate for cellulose insulation installed in wall spaces. The Commission believes that the attic floor radiant panel test is a necessary test and should be included in the amendment. The commentor has not presented any information showing that including the test in the amendment would be likely to mislead consumers.

One commentor criticized the Commission for relying on UL's data to support the applicability of the radiant panel test, while disregarding UL data concerning the Steiner tunnel test.

The test data generated by U.L. and considered by the Commission in proposing the amendment are as equally supportive of the attic floor radiant panel test as the Steiner tunnel test. However, these data do not demonstrate that the Steiner tunnel and attic floor radiant panel tests represent equivalent measurements of flammability properties, or that the Steiner tunnel test would provide a greater degree of protection than the attic floor radiant panel test. The Steiner tunnel test, unlike the attic floor radiant panel test, assesses the rate of flame spread of cellulose insulation, once ignition has occurred. On the other hand, the attic floor radiant panel test determines the conditions under which flame spread will not occur. Because of these differences, in many cases the evaluation of the suitability of materials for installation in attics based on the two tests differs. Cellulose insulation that ignites in an attic could cause injury regardless of how quickly the fire spreads, since attic fires may go undetected by the occupants of a house for a long period of time. Based on presently available information, the Commission believes that the attic floor radiant panel test, which has been shown to assess the conditions for flame spread to occur over cellulose insulation, is the more appropriate test to determine the suitability of cellulose insulation for attic installation.

One commentor criticized the reference in the preamble of the proposal to an NBS study showing that the Steiner tunnel test is invalid for certain low density materials, such as cellulose insulation. According to the commentor, the statement is inaccurate since it does not identify the nature of the full scale fire situation and since the statement provides no technical substantiation. According to the commentor, the Steiner tunnel test does provide valid data on flammability performance of low density material over a broad spectrum of fire conditions. The commentor stated that similar fire test data does not exist to substantiate the use of the attic floor radiant panel test for low density insulation.

The statement in the preamble to the proposal concerning the applicability of the Steiner tunnel test to low density materials was based on an NBS room fire study. In a series of full scale room fire tests conducted by NBS (NRC–NBS Cooperative Testing Program, June 1977) the flame spread classification (FSC) of 25 from the Steiner tunnel test was shown *not* to correlate with the spread or intensity of the room fire. In this series of tests a low density fire retardant plastic foam material with a FSC of 25 used as a wall lining caused flame spread over the entire surface of the room from a corner ignition source and room flashover in six minutes. A low density fiberglass material also with a FSC of 25, tested under identical conditions did not allow flame to spread from the corner containing the ignition source and did not produce flashover. These tests indicate that the ASTM E–84 Steiner tunnel test is not appropriate to characterize the fire performance of some low density materials. Furthermore, the coefficient of variation for reproducibility of the Steiner tunnel test on treated cellulosic insulations has been determined through round robin testing to be 35 per cent, which could be caused by variations when low density materials, such as cellulose insulation are tested in the Steiner tunnel. The attic floor radiant panel test has been shown to be more reproducible than the Steiner tunnel test.

One commentor criticized one aspect of the test methodology used by NBS, and stated that in conducting laboratory and attic tests referred to in the proposed amendment, NBS did not verify flame spread classifications in the Steiner tunnel test attributed by manufacturers to cellulose insulation samples.

Although NBS did not verify the flame spread rating stated on the insulation package when conducting the original series of attic tests referred to in the proposal, in the second series of attic tests conducted recently (*NBS-Flame Spread Tests on Cellulosic Insulation in a Large-Scale Attic*, dated April 16, 1979), NBS tested materials in the attic which had been evaluated in the Steiner tunnel round robin program. At the time these materials were tested in attic tests, Steiner tunnel flame spread classification data was available for these materials from six independent laboratories.

One commentor stated that the Commission's analysis of the results of Underwriter's Laboratories (U.L.) full scale attic fire studies in the proposal was highly subjective and represented unjustified excerpts from an August 8, 1978 U.L. technical note.

In issuing the proposed amendment, the Commission considered all of the relevant information in the U.L. full scale attic fire studies, as well as all other available relevant information concerning the issues in the proposed amendment. The Commission believes that its evaluation of the U.L. studies was objective and fair in light of all of the available information.

One commentor stated that the Commission's response to comments in the proposed amendment concerning the attic floor radiant panel was based on very limited technical substantiation, and was based solely on work at NBS that was carried out primarily to generate support for the test.

In preparing the responses to comments in the proposed amendment the Commission considered all available data relevant to the issues in the amendment, including reports supplied by manufacturers of cellulose insulation and independent testing laboratories. Although much of the available data was furnished by NBS, the Commission has no evidence that this data is inaccurate or biased. Available information shows that the NBS studies were objective and designed to fairly evaluate the criteria in the amendment. The Commission is not aware of any studies or test data from other laboratories that shows that the NBS studies are inaccurate.

According to one commentor, the proposed amendment represents an unjustified intrusion into private sector programs. The commentor stated that the Commission did not provide

manufacturers with sufficient time to develop private sector programs.

The proposed amendment was published as required under Pub. L. 95–319, "The Emergency Interim Consumer Product Safety Standard Act of 1978". In this legislation, Congress found that an urgent need exists for the expedited setting of interim mandatory Federal standards for the manufacture of cellulose insulation and that these standards are reasonably necessary to eliminate or reduce an unreasonable risk of injury to consumers from flammable or corrosive cellulose insulation. The time frames for issuing the proposed amendment are specified by Pub. L. 95–319. The test methods in the amendment are derived from voluntary standards developed by the private sector and test methods used by GSA Specifications. Although the attic floor radiant panel test is a new test compared to the Steiner tunnel test, industry members have had at least eighteen months since the introduction of the test for insulation to consider the test and its requirements.

One commentor criticized the attic floor radiant panel test, since the test method has not been adopted by any national standards developing organization as a fire performance test for insulation materials. According to the commentor, adoption of the test procedure by the National Fire Protection Association (NFPA) as a floor covering test does not justify its acceptance for insulation.

Although the attic floor radiant panel test has not been adopted as a standard fire performance test for insulation, materials by a national standards developing organization, the Commission does not believe that this fact is relevant to the determination, required by the statute, whether the amendment, including this test, is not necessary to protect the consumer or whether the amendment would create an undue burden on persons subject to the interim standard. The attic floor radiant panel test apparatus and method is described by ASTM E–648. The major difference is that the amendment includes a sample tray to hold loose fill insulation. The Commission believes that NBS has provided an adequate technical rationale for using a 0.12 W/cm^2 critical radiant flux acceptance criteria. This rationale has been made available for interested persons to study and submit comments to the Commission. The justification for the attic floor radiant panel test is not based on adoption of the test by the National Fire Protection Association (NFPA), but is instead based on analysis and experience with the test method by government and industry.

One commentor requested that the Commission include specific details in the attic floor radiant panel test concerning the positioning of the pilot burner and placement of the test specimens. According to the commentor, this aspect of the test is critical, since irregular placement of the test specimens causes differences in flame contact and significant variations in test results. According to the commentor, test results can be controlled or drastically altered by misalignment and misapplication of the burner.

Tests conducted by NBS have not shown that there are significant variations in test results due to the positioning of the burner and the placement of the test specimen. According to NBS, the test problems encountered by the commentor may have been caused by surface irregularities in the specimens prepared by the commentor. The amendment, at § 1209.6(d)(2), provides that specimens for the test should be prepared "taking care not to compact the insulation or leave large voids in the surface of the material". If these procedures are followed, surface irregularities in the specimens should be avoided.

One commentor questioned whether the small sample used in the radiant panel test would validly represent the real life situation in which the insulation materials were installed over a much larger area. The commentor also questioned whether the test method with such a small sample could validly evaluate materials where chemical distribution and displacement variations exist. According to the commentor, the Steiner tunnel test sample is so large that it "normalizes" the effects that would be caused by small samples.

Based on studies and information provided by NBS, the Commission believes that the sample size used in the attic floor radiant panel test is adequate to evaluate the flame resistance of insulation materials covering attic floors. A sample having a critical radiant flux of 0.12 W/cm2 when tested in the attic floor radiant panel spreads flame over 0.24m2 of surface. A sample having a flame spread classification of 25 when tested in the Steiner tunnel spreads flame only over 0.42m2 of surface. Actual attic floor areas are two orders of magnitude greater than the area involved in either test, so that the Steiner tunnel test sample is not appreciably greater than the attic floor radiant panel test sample, relative to the size of attic floor areas. As discussed earlier, information available to the Commission indicates that the attic floor radiant panel test is an accurate simulation of the fire performance of cellulose insulation installed in attics. The repeatability of test results is influenced by the uniformity of test specimens. The attic floor radiant panel test has been shown to be both more repeatable and more reproducible in round robin testing than the Steiner tunnel test (Lawson, NBSIR 79–1588). Minor variations in specimen chemical distribution may have been the cause of the erratic Steiner tunnel measurements when evaluating loose-fill insulation materials. Based on the data collected in round robin testing, the Commission believes that there is no substantiation for the statement that the size of the Steiner tunnel test sample "normalizes" the effects that would be caused by small samples.

One commentor stated that cellulose insultion intended for pneumatic application should be tested at settled density rather than blown density, as specified at § 1209.6(d)(1) of the amendment. According to the commentor, the blown density test method will produce variations in the density of the material in the tray and is not representative of conditions in an actual building.

Information available to the Commission indicates that critical radiant flux increases with increasing specimen density. Since evaluating materials at their blown density is the worst case condition for this test, the Commission believes that the blown density method should be used instead of the settled density test method recommended by the commentor. The commentor has not provided any information, and the Commission has no information showing that the blown density method for this test produces wide variations in the density of the material in the tray, or is not representative of conditions in an actual building. Based on its experience with the test method, the Commission believes that blown density is representative of conditions in an actual building at the time of the original installation.

One commentor stated that the radiant panel test should be related to the end-use thickness of the cellulose insulation when installed to obtain a given R-value.

The commentor has not presented any information, and the Commission does not have any experimental data comparing the effects of specimen thickness on critical radiant flux. As a result, it is not possible at this time to relate specimen thickness to critical

radiant flux. The 5 cm specimen thickness used in the attic floor radiant panel test is generally used for fire tests on insulation materials. The attic floor radiant panel test procedure as a whole has been shown to correlate to real life simulations of attic fires. Although the thickness of the specimen used in the test may not be the same as the thickness of cellulose insulation in real life conditions, the Commission believes that changing one particular test parameter may adversely affect the overall correlations of the test to real life simulations of attic fires. The Commission has no information that shows there is a need to change the specimen thickness in the attic floor radiant panel test.

One commentor stated that the Commission should allow the radiation pyrometer to be calibrated by a transfer method using a working model of the complete apparatus.

The Commission has not included a transfer method of calibration for the radiation pyrometer since this method allows calibration at only one condition. The calibration method specified in the amendment provides for a range of calibration points to ensure that the instrument is working properly. The commentor has not supplied any information showing that the transfer method of calibration for the radiation pyrometer should be included in the amendment.

One commentor stated that there was little correlation between proposed alternative figures 5a, 5b, 7a, and 8a for constructing the radiant panel and figures 5, 7, 8, and 11 which are presently included in HH–I–515D. The commentor agreed with the recommendation for the simplified construction of the dummy specimen shown by proposed Figure 7a. The commentor stated that there was no need to change the construction of the Specimen Tray and Dummy Specimen Holder, since the interlaboratory evaluation of the attic floor radiant panel showed good correlation using presently designed equipment. According to the commentor, the suggested changes for the Specimen Tray and Specimen Holder would require costly and extensive changes to existing attic floor radiant panel test equipment and could produce different data between laboratories using present test equipment and laboratories using the modified equipment. The commentor also stated that the suggested changes to the specimen tray and dummy specimen holder will make the attic floor radiant panel test apparatus unsuitable for testing carpet flooring systems, floor covering systems, and mineral fiber insulation.

The Commission agrees with the commentor that there is no need to include figures 5a and 8a as replacement figures in the attic floor radiant panel test and has not included these figures in the amendment. The Commission has not included proposed figure 7a, concerning the dummy specimen and dummy specimen holder, in the final amendment, since the Commission believes that the original figure adequately describes the device. The Commission agrees with the commentor that the suggested changes to the specimen tray (figure 8a) should not be included in the amendment since the changes to the tray would require additional changes to other provisions of the radiant panel test apparatus. These additional changes may make the attic floor radiant panel unsuitable for use in testing other materials. The Commission believes that proposed figure 5b should replace figure 9, since, unlike figure 9, figure 5b demonstrates the need for positioning the specimen tray before starting the test. The Commission has included this figure in the amendment as figure 5.

One commentor stated that the Commission should eliminate the proposed 10.5 cm dimension for the location of the radiant panel from the zero point on the dummy holder (figure 5a). The commentor recommended that the Commission use the original dimensions in proposed figure 5 of 8.9 and 14 cm from the edge of the radiant panel for establishing the zero point and flame impingement point.

The Commission agrees with the commentor and has made appropriate changes in the amendment (see figure 5).

One commentor suggested that the Commission include the alternate drawing in proposed figure 5b, without the 4 cm dimension on the specimen tray. The commentor stated that the alternate drawing clarified the relationship between the zero reference point and the heat source.

The Commission agrees with the commentor and has included the alternate drawing in the final amendment as figure 5, without the 4cm dimension on the specimen tray.

The same commentor recommended that the dimension for the specimen opening in the dummy holder in proposed figure 7a be changed from 100cm (39.4 inches) to 101.6cm (40 inches). According to the commentor, an error in the original version of HH–I–515D equated 100cm with 40 inches. The commentor, an independent testing laboratory, stated that it had fabricated its dummy specimen holders based on the original dimension in HH–I–515D.The Commission has not included proposed figure 7a in the final amendment. Based on its experience with the test apparatus, the Commission does not believe that the dimension for the specimen opening in the dummy holder is a critical dimension and has not included this dimension in specifying the apparatus. The Commission has no information showing that the dimension proposed by the commentor would have any effect on test results, and does not object to the dimension suggested by the commentor.

One commentor stated that the tolerances of ±.05cm (±.02 in.) on non-critical sheet metal dimensions were too restrictive for commerical practices. The commentor recommended that the description of the radiant panel test apparatus specify only critical dimensions, or ones which would affect performance, leaving non-critical dimensions to the discretion of the equipment manufacturer.

The amendment includes drawings of each test apparatus with complete dimensions in an effort to standardize equipment and assist persons in constructing the equipment. However, the Commission has changed the amendment to relax tolerances on non-critical dimensions. The Commission has also included non-critical dimensions in the figures.

One commentor criticized the specification of 12 guage steel for the thickness of the specimen holder shown in proposed figure 7a and specimen tray shown in proposed figure 8a. According to the commentor, the use of 12 guage steel would conflict with the thickness of 0.105 inches described at § 1209.6(a)(3) and § 1209.6(a)(4).

The Commission agrees with the commentor and has corrected the specification from 12 guage steel to 14 gauge steel for the thickness of the specimen holders at § 1209.6(b)(3) and figure 6 and for the specimen tray at § 1209.6(b)(4) of the amendment issued here.

Requirements and test procedures for smoldering combustion. The amendment includes requirements and test procedures for smoldering combustion at §1209.3(c) and 1209.7. In response to the proposal, the Commission received the following comments concerning these requirements and procedures:

One commentor requested that the smoldering combustion test be eliminated, since smoldering is slow and at a relatively low temperature and since smoldering of insulation may be a

safety feature by alerting people in time to evacuate the house.

The Commission does not agree with the commentor that the smoldering combustion test should be eliminated from the amended interim standard. Although the rate of propagation of smoldering combustion of cellulose insulation is slow, the combustion is persistent. Smoldering that is started in an attic will propagate, and will consume other cellulose materials, such as wood building structural members buried by the insulation. The Commission has knowledge of some instances where there has been rapid transition from smoldering combustion to flaming combustion of cellulose insulation in an attic space. Flaming combustion of cellulose insulation in an attic space can lead to total involvement of the structure. Based on available information the Commission does not believe that smoldering combustion is a safety feature that should not be addressed in the amendment.

One commentor recommended that the Commission eliminate the provision at §1209.7(b)(1) of the smoldering combustion test procudure that allows sample preparation by combing or otherwise mixing. According to the commentor, preparation by blowing is the only means that should be permitted. The commentor also stated that the cellulose insulation should not be hand loaded into the container, since hand loading will result in wide variations in densities throughout the container. The commentor stated that the insulation should be blown into the container and settled by dropping and then refilled by blowing until the proper weight of material fills the container.

The Commission agrees with the commentor that the preparation of a test specimen with uniform density is important in the smoldering combustion test because of the sensitivity of test results to density variations. At this time the Commission is not able to adopt the method suggested by the commentor since the commentor did not provide, and the Commission does not have, comparative data between the method suggested by the commentor and the proposed method. At this time the Commission believes that the method in the amendment will provide the most reproducible results.

One commentor stated that the Commission should revise the technique specified for placing insulation into the sample holder. The commentor recommended that a removable extension be added to the sample holder to increase the height of the sample holder and avoid creating layers of insulation with different densities.

The preparation of a test specimen with uniform density in the smoldering combustion test is important because of the sensitivity of test results to density variations. The Commission agrees with the commentor and has revised the techniques for placing insulation into the sample holder at § 1209.7(b)(1).

One commentor suggested that the smoldering combustion test be conducted under ASTM standard laboratory conditions (ambient laboratory conditions). According to the commentor, it is not necessary to conduct the test at the same temperature and relative humidity as used in conditioning the specimens.

Smoldering combustion tests conducted by NBS have shown that test results are sensitive to the moisture content in the atmosphere. Significant variations in test results have been produced by increasing the specific humidity of the atmosphere by 0.0055 (Kg Water Vapor/Kg Dry Air). Based on these demonstrated effects of humidity conditions, the Commission believes that the humidity conditions and limits at § 1209.7(a)(4) should be included in the amendment.

One commentor questioned whether altitude affects test results obtained using the smoldering combustion test.

At the present time there is no existing data that can be used to estimate variations in smoldering combustion test results that may be caused by changes in altitude. The commentor did not present any information, and the Commission does not have any information, showing that altitude affects smoldering combustion test results.

Other comments. Several commentors stated that the Commission should require mineral wool insulation to meet the same flammability and corrosiveness standards as cellulose insulation.

Based on presently available information, the Commission does not believe that the flammability and corrosiveness requirements of the amendment should be extended to mineral wool insulation. On March 5, 1979, the Commission denied part of a petition that requested the Commission to establish a mandatory standard to address the risk of injury from fires associated with fibrous glass (mineral wool) insulation (44 FR 12080). The Commission denied this part of the petition since available information is insufficient to determine that an unreasonable risk of injury from fires is associated with fibrous glass insulation. The Commission is aware of very few fire incidents associated with fibrous glass insulation and is not aware of any incidents of corrosion associated with fibrous glass insulation. In addition, no injuries have been reported in the incidents available to the Commission. At the present time, mineral wool insulation manufacturers are voluntarily labeling their products with information concerning proper installation, including the need to provide clearance around heat sources and the flammability of vapor barriers.

One commentor stated that standards for cellulose insulation should be based on actual conditions rather than laboratory tests.

The Commission does not believe that it would be feasible to develop a standard requiring tests under actual conditions, because of the amount of time and expense needed to conduct such tests. The test methods of the amendment are intended to simulate the effects of conditions that can occur when the insulation is installed. Based on studies conducted by NBS and the Commission's experience with test methods for cellulose insulation, the Commission believes that the test methods of the amendment provide the most accurate available simulation of actual conditions.

One commentor stated that a much simpler flammability standard could be set by specifying required levels of boric acid.

The Commission does not believe that simply specifying the required level of boric acid would be sufficient to protect consumers from the unreasonable risk of injury from fires asssociated with cellulose insulation. Information available to the Commission indicates that the particle size and uniformity of mixing of flame retardants affects the fire performance of cellulose insulation. Simply specifying a required level of boric acid would not be sufficient to address variables such as particle size and uniformity of mixing that are taken into consideration in the flammability performance requirements of the amendment.

One commentor stated that the flammability tests of the proposed amendment do not protect the consumer against hazards presented by recessed electrical lights and other heat sources, since attic fires occur at much lower temperatures than used in the flammability tests of the amendment.

The Commission believes that the smoldering combustion test in the amendment will ensure that cellulose insulation has some resistance to smoldering ignition from heat sources.

The Commission is aware that the flame resistance tests in the amendment may not fully address problems associated with the improper installation of cellulose insulation. At the present time the Commission is unaware of any flame resistance test which has been shown to be adequate or has gained widespread recognition or approval for simulating exposure to recessed electrical light fixtures. Elsewhere in this issue of the **Federal Register**, the Commission has published a labeling rule that is intended to address problems associated with the improper installation of cellulose insulation, including improper installation around or above recessed electrical light fixtures.

One commentor claimed that there should be some control over qualification of outside laboratories. According to the commentor, some of the laboratories have been providing questionable results.

Another federal agency, the Department of Commerce (DOC), has developed criteria for accrediting test laboratories that test thermal insulation materials. The DOC program, "The National Voluntary Laboratory Accreditation Program", has as its goal the implementation of a national voluntary system to examine, on request, the professional and technical competence of private and public testing laboratories.

One commentor recommended that the Commission require manufacturers to label insulation with installation instructions to warn installers not to install insulation around recess lighting fixtures and heat producing devices, and instructions concerning installation around attic soffit or eave grills so as not to prevent adequate ventilation.

Elsewhere in this issue of the **Federal Register** the Commission has published a final rule requiring manufacturers to label containers of cellulose insulation with information conerning the proper installation of insulation away from recessed lighting fixtures and exhaust flues of heat producing devices or apparatus such as furnaces, water heaters, and space heaters. The labeling requirement does not address the proper installation of insulation to provide adequate ventilation since the Commission does not believe that this information is related to safety.

One commentor stated that spray-on cellulose insulation should also be included in the definition of cellulose insulation if the definition includes "wet process" insulation. Another commentor stated that if spray on cellulose insulation is not included in the amendment, the Commission should initiate an independent proceeding to establish appropriate standards for this cellulose insulation material.

As explained earlier in section B of this preamble, the Commission intends spray-on cellulose insulation to be covered by the amendment. Spray-on cellulose insulation is included within the scope of the definition of cellulose insulation at § 1209.2(a). "Wet Process" insulation is also covered by the amendment.

One commentor suggested that the Commission delete the effective date of the amendment from the labeling requirement at section 1209.9(a).

The Commission agrees with the commentor that the effective date should be deleted from the label. At the present time the amendment based on GSA Specification HH–I–515D is the only amendment to the interim standard that has been issued by the Commission. If the Commission issues another amendment in the future, and believes that it is necessary to provide labeling that would allow consumers to identify insulation meeting the requirements of a later amendment, the Commission may require a different label in the future.

One commentor stated that tests for starch content should be included in the proposed amendment to prevent the insulation from attracting rodents.

The amendment does not include the starch content provision of HH–I–515D, since this provision is not part of the flame resistance or corrosiveness provisions of HH–I–515D. As provided in the act, the amendment includes only those parts of HH–I–515D that are revisions to the flame resistance and corrosiveness provisions of HH–I–515C.

Several commentors stated that the proposed amendment should include a flame resistance permanency test to ensure that the insulation retains its fire resistant properties with time. According to one commentor, the test must be a reliable predictor of flame resistance permanency.

At the present time, the Commission is not aware of any test which effectively assesses flame resistance permanency. An NBS analysis of the flame resistance permanency test in the present interim standard indicates that this test is not an appropriate measure of flame resistance permanency, since the test method in HH–I–515C (the GSA Specification on which the interim standard is based) has not been shown to correlate with real life conditions. HH–I–515D does not include a test method for assessing flame resistance permanency. The Commission staff is considering the need to develop a test to assess flame resistance permanency.

One commentor recommended that the interim standard be given a title or identifying number so that it could be referenced in building codes and ordinances.

The interim standard does have a title and identifying number. The interim standard may be referred to as the "Interim Safety Standard for Cellulose Insulation" or as "16 CFR Part 1209, Subpart A."

One commentor recommended that the amendment be given a title that does not include the word "cellulose" until other types of insulation are covered by standards.

The Commission believes that the title of the interim standard should include the word cellulose in order to eliminate potential confusion about the applicability of the interim standard.

One commentor asked why the standard is referred to as an interim standard, and requested that the standard be called a "permanent" standard.

The standard is referred to as an interim standard since the legislation under which the standard is issued refers to the standard, based on revisions to GSA Specification HH–I–515C, as an interim standard. The legislation provides that interim standards are enforced in the same manner as any other standard. A violation of the interim standard is considered the same as a violation of any other standard issued by the Commission. The legislation provides that the Commission may issue a final consumer product safety standard if the Commission determines that the interim standard does not adequately protect the public from the unreasonable risk of injury associated with flammable or corrosive cellulose insulation. At the present time the Commission has no plans to issue a final standard.

Several commentors stated that the comment period for the proposed amendment did not provide sufficient time to provide detailed comments.

The 30 day comment period for the proposed amendment was specified by section 35(c)(2)(E) under Pub. L. 95–319. Although the Commission did not have the option of extending this comment period, the Commission attempted to provide additional time for the public to present its views by publishing and soliciting comments on an advance notice of intent concerning the proposed amendment and proposed certification rule (43 FR 39720, September 6, 1978). The Commission also mailed the proposed amendment to over 1,200

individuals and organizations that the Commission believed had an interest in the proceeding. Included in the persons receiving this mailing were all known cellulose insulation manufacturers, insulation trade associations, building code organizations, and other interested persons. In response to the proposed amendment and proposed certification rules the Commission received numerous detailed comments within the comment period.

One commentor suggested that "importers" be added to the phrase "manufacturers and private labelers" at § 1209.9.

The Commission does not believe that it is necessary to add the term "importers" to the phrase "manufacturers and private labelers" at § 1209.9, since the definition of manufacturer, at section 3(a)(6) of the act, includes persons who import a consumer product. However, the Commission has added the term "importer", as the commentor suggested, to this section to ensure that this provision is clear.

One commentor stated that if the Commission adopts the proposed amendment, state and local government officials would not be able to enforce state and local codes requiring insulation materials to conform to flammability resistance criteria based on the Steiner tunnel test.

Section 26 of the CPSA (15 U.S.C. 2075) provides that the state and local governments may not establish or continue in effect any standards or regulations designed to deal with the same risk of injury as the federal standard, unless the state or local government requirements are identical to the federal standard. As a result of this provision, after the amendment becomes effective state and local governments would not be able to enforce flammability standards for cellulose insulation based on the Steiner tunnel test. However, state and local governments could amend their requirements to make them identical to the amendment, and then enforce the amended requirements; or, as provided by section 26, state and local governments could apply to the Commission for an exemption from preemption. If granted, the exemption could allow state and local governments to enforce a different flammability standard for cellulose insulation.

Economic considerations. Several commentors stated that the proposed amendment was unnecessary. One commentor claimed that the proposed amendment does not contribute to safety but only adds to manufacturing costs and costs to consumers. Another commentor stated that the proposed amendment was unnecessary since the present interim standard provides adequate protection to consumers. According to the commentor, the proposed amendment represents an unnecessary cost to manufacturers and consumers. Another commentor stated that the proposed amendment was unnecessary since the amendment would be costly to the industry and the consumer and would not bring about effective regulation. Several commentors supported the proposed amendment as necessary and appropriate to protect the public safety. One commentor supported the proposed amendment and stated that the Commission's standards would benefit the cellulose insulation industry.

The Commission agrees with the commentors who stated that the amendment is necessary. The Commission believes that the flame resistance requirements of the amendment are a substantial improvement over the flame resistance requriements of the present interim standard. Unlike the present interim standard, the amendment includes smoldering combustion test procedures and requirements to address the smoldering combustion problem associated with cellulose insulation. In addition, the attic floor radiant panel test procedures and requirements more accurately simulate the hazard scenario involving cellulose insulation than does the Steiner tunnel test of the present interim standard. Unlike the Steiner tunnel test, the attic floor radiant panel test addresses the hazard scenario where insulation installed on the floor of an attic in still air and exposed to radiation from the roof is subjected to a small ignition source. Based on presently available information, the Commission believes that the corrosiveness requirements and test procedures in the amendment are a significant improvement over the requirements and test procedures of the present interim standard. The commission believes that the test procedures in the amendment are more reproducible than the procedures in the present interim standard, since the amendment has eliminated much of the subjectivity and other sources of potential variability in the present interim standard.

Based on presently available information, the Commission believes that the amendment would not have a major economic impact on the availability or price of cellulose insulation. Although some cellulose insulation manufacturers may go out of business if they are unable to meet the requirements of the amendment for cellulose insulation, the uncertain future demand situation may be the most important factor for manufacturers in deciding whether to remain in business. Approximately fifty manufacturers have indicated to the commission that they are presently able to meet the provisions of HH–I–515D, on which the amendment is based. The amendment is expected to increase chemical costs in general for cellulose insulation manufacturers by 1 or 2 percent depending on the type and quantity of fire retardant chemicals being used at the present time. Because the chemical loading that would be necessary to meet the requirements of the amendment is similar to the chemical loading necessary to meet the present interim standard, the chemical loading should not affect the thermal properties of the insulation. As a result, an additional amount of insulation should not be necessary to achieve the appropriate thermal resistance for any given application.

The Commission believes that the labeling requirement of the amendment will have a minimal economic impact, since this provision would not require manufacturers and private labelers to alter the product and since manufacturers and private labelers are currently required to label their product under the interim standard. The Commission believes that the effective date of October 16, 1979 will allow most manufacturers and private labelers to draw down inventories of bags with non-complying labels and thereby limit the need for hand-stick-on labels. At worst, if inventories are not depleted and hand-stick-on labels are used, the Commission estimates that these labels would add approximately 2½ cents to the cost of each bag of insulation, as well as an application cost of at most 4 cents per bag during the limited production period necessary to deplete inventories of empty bags.

Testing and certification costs resulting from the Commission's certification requirements (published elsewhere in this issue of the **Federal Register**) will vary depending on the size and technical competence of the manufacturer or private labeler. In most cases, the testing costs associated with finding an acceptable chemical formulation will be relatively small since (1) most large manufacturers and private labelers will have the internal capability of performing these tests and, (2) most of the remaining manufacturers and private labelers will probably purchase the appropriate chemical

formulation as a premix, thus experiencing no direct development and testing costs. The potential economic impact of the certification rule is discussed in greater detail in the preamble of the certification rule.

The Commission believes that the amendment will have little impact on retail prices. Based on the Commission's economic analysis, the Commission believes that cellulose insulation prices would probably increase by about 1 percent at the retail level. This means that consumers would pay $1 to $2 more to insulate a 1,200 square foot attic to a value of R–19.

One commentor stated that the requirements of the amended interim standard would not be difficult to meet for a manufacturer who is able to meet the requirements of the present interim standard.

Based on presently available information, the Commission agrees in general with the commentor. However, small manufacturers who are able to meet the requirements of the present interim standard may lack skill and technical knowledge to meet the requirements of the amendment.

One commentor stated that the proposed amendment would have an adverse economic effect as a result of the cost of additional testing to ensure compliance with the amendment.

The Commission does not believe that testing to ensure compliance with the amendment would have an adverse economic effect on the cellulose insulation industry beyond the initial qualification testing costs. The qualification testing requirements in the certification rule are very flexible. Qualification testing costs are likely to be greatest for firms which need, for marketing purposes, a certification label from a commercial laboratory. Generally, the label can be obtained only if a manufacturer participates in a commercial laboratory's complete certification program, which includes at least one on-site inspection and testing in addition to that in the amendment. The cost for this kind of program leading to a certification label is approximately $2,500 to $3,000. Approximate fees for the tests in the amendment total under $1,000. Based on presently available information, the Commission believes that the costs of testing to ensure on-going compliance with the amendment will not be higher than the costs of testing under the present interim standard, and, in fact, may be lower than the costs of testing under the present interim standard.

Two commentors stated that the proposed amendment would adversely affect borderline and small insulation companies, forcing some out of business as a result of the new requirements and the high cost of product liability insurance.

The Commission has no information to indicate that the amendment would increase the costs of product liability insurance and would force small insulation companies out of business. The expenditure required to meet the requirements of the amendment will vary among firms depending on present chemical formulations, equipment and technical knowledge. At the present time, manufacturers are assessing whether their future financial situations will be strong enough to justify any additional expenditures to meet the requirements of the amendment. This assessment will be based in part on estimates of future demand. The Commission estimates that demand will remain near the present low level for the next several years. The Commission estimates that up to 100 manufacturers will decide not to make the investment necessary in order to continue production. (This estimate is based on very limited data.)

One commentor stated that substituting the attic floor radiant panel test for the Steiner tunnel test would render useless a large body of Steiner tunnel test data developed over the years. According to the commentor, discarding existing tunnel data would have an economic impact on the cellulose insulation industry.

The commentor has not presented any information, and, the Commission does not have any information showing either that the adoption of the attic floor radiant panel test would force manufacturers to discard Steiner tunnel test data developed over the years, or that discarding such data would have an economic impact on the cellulose insulation industry.

One commentor recommended that the effective date of the amendment be delayed until December 31, 1979 to allow manufacturers additional time to test their products and resubmit modified formulations at least two or three times. According to the commentor, the opportunity to resubmit modified formulations would allow manufacturers to establish formulations that are as economical as possible. The commentor stated that commercial testing laboratories may not have sufficient capacity to test manufacturers' products by the proposed effective date of October 16, 1979. The commentor also stated that there is no evidence that delaying the effective date of the proposed amendment would present an unreasonable risk of injury to consumers. Another commentor stated that there should be an effective date that is at least 180 days after publication of the final amendment in order to provide sufficient time for product development, compliance testing, and labeling.

The Commission believes that the amendment should become effective on October 16, 1979, as proposed. The commentors have not presented information that shows that a later effective date is necessary. The October 16, 1979 effective date will allow manufacturers, who have not already done so, at least one opportunity to develop and test their product to determine that their product can meet the requirements of the amendment. Information available to the Commission indicates that most manufacturers have initiated testing programs months ago in order to develop products capable of meeting the tests in the amended standard. The Commission has no information that testing laboratories do not have sufficient capacity to test manufacturers' products by the October 16, 1979 effective date. Instead, in the last few months the capacity of testing laboratories to test specimens under the requirements of the amendment has increased significantly. The Commission believes that the October 16, 1979 effective date will allow most manufacturers time to draw down inventories of bags that are labeled under the present interim standard and thereby limit the need for hand-stick-on labels. If the effective date of the amendment is extended, as requested, the amendment would not cover the primary purchasing season for insulation, which begins in September and is usually greatest in late November.

One commentor stated that it is certain that manufacturers will have to use temporary labels to comply with the labeling requirement at § 1209.9. Another commentor stated that the label requirements would be expensive to meet as a result of the large number of non-complying bags in inventory.

Although a few manufacturers may have significant inventories of bags without the appropriate label at the time of the effective date, in general, most manufacturers interviewed by the Commission do not forsee major problems in meeting the labeling requirements. In the event that hand stick-on labels are needed for containers of insulation without the proper label in inventory, the Commission estimates that these hand stick-on labels would

add approximately 2½ cents to the cost of each bag of insulation, as well as an application cost of approximately 4 cents per bag of insulation over the limited period of time needed to deplete inventories.

One commentor asked whether a pressure sensitive or glued on label would be considered to be a permanent and conspicuous label meeting the label requirement of section 1209.9.

As provided in Section 1209.9(a) a pressure sensitive or glued on label can be considered to be a permanent label provided the label remains attached to the insulation container for the expected time interval between the manufacture of the product and its installation. In addition, the label must meet the requirements of § 1209.9(b) for prominence and conspicuousness. The Commission believes that pressure sensitive labels can meet these requirements.

V. Statutory Findings

Section 35(a)(2)(F) of the act, as amended, provides that the Commission must issue the amendment to the interim consumer product safety standard unless the Commission determines, after consultation with the Secretary of Energy, that (1) the amendment is not necessary for the protection of the consumer from the unreasonable risk of injury associated with flammable or corrosive cellulose insulation; or (2) implementation of the amendment will create an undue burden on persons who are subject to the interim consumer product safety standard. The *Conference Report* to Pub. L. 95–319 emphasizes that the Commission has an affirmative obligation to adopt the amendment to the interim standard. The Commission should not adopt the amendment only if the Commission makes a determination that the amendment is unnecessary or unduly burdensome. (H. R. Rept. No. 95–1322, 95th Cong., 2d sess. 8 (1978)).

A. Determination Whether the Amendment Is Not Necessary to Protect the Consumer

Congress required the Commission to issue the present interim standard after finding that an interim standard is reasonably necessary to eliminate or reduce an unreasonable risk of injury to consumers from flammable or corrosive cellulose insulation (Sec. 2(a)(4), 15 U.S.C. 2051 note, Pub. L. 95–319). In the House Committee report concerning this legislation, the members of the House Committee on Interstate and Foreign Commerce based the need for the legislation, in part, on the fact that no Federal mandatory safety standard existed to ensure the safety of cellulose insulation purchased by consumers. The House Committee members stated that the absence of a standard exposed the consumer to risks from fire and corrosion damage from untreated or improperly treated cellulose home insulation. According to the House Report, unless a safety standard is enacted, fires caused by flammable cellulose insulation are likely to increase and the potential for serious injury to the occupants of these homes is substantial. (H.R. Rept. No. 95–1116, 95th Cong., 2d Sess. 2 (1978)).

As Congress instructed, the Commission issued the present interim standard based on HH–I–515C. The interim standard applies to all cellulose insulation manufactured after September 7, 1978. Since Congress has already concluded, in requiring the present interim standard, that a standard is needed to protect the public from the unreasonable risk of injury from fires and corrosion associated with cellulose insulation, the Commission does not believe that it is appropriate to reevaluate the need for a standard in considering whether the amendment is necessary. Instead, the Commission has based its decision as to the need for the amendment on an evaluation of the adequacy of the present interim standard and the need for the amendment in terms of serving the Congressional purpose of protecting the public. The Commission discusses below the information it has that compares the amendment and the present interim standard in terms of protection of the public.

At the present time the Commission has the following information supporting the determination that the amendment is necessary to protect the public.

Flame resistance requirements and test procedures of the proposed amendment. (1209.3(b), 1209.6, 1209.3(c), 1209.7)

The Center for Fire Research of the National Bureau of Standards (NBS) has prepared for the Commission a technical rationale for the flame resistance provisions of HH–I–515D *(Technical Rationale for the General Services Administration Federal Specification HH–I–515D Flame Resistance Provisions,* Center for Fire Research, National Bureau of Standards, December 1, 1978). The technical rationale includes references to other studies and documents. A copy of this technical rationale and supporting documents is available in the Office of the Secretary of the Commission. The Commission has analyzed and reviewed this technical rationale and accompanying documents, and, based on presently available information, agrees with the conclusions in the NBS technical rationale.

Requirements and test procedures for smoldering combustion. According to the NBS technical rationale, a review of fire incident data showed that smoldering was the most likely hazard associated with cellulose insulation. The NBS technical rationale stated that more than 80 percent of the fires associated with insulation involved cellulose insulation and were started by overheated electrical light fixtures, and other electrical sources, and heated flues. NBS studies indicated that when exposed to a heat source, either in an attic or a side wall, cellulose insulation could be induced to smolder unless properly treated. According to NBS, heat sources such as recessed lighting fixtures and glowing wire connections in side walls could result in temperatures in excess of 260°C (500°F) when insulation contacted the heat sources. Temperatures as high as this are sufficient to induce smoldering.

The smoldering combustion test procedures and requirements have been included in the revised GSA Specification HH–I–515D and in the amendment to the interim standard: since the flame resistance test of the present interim standard, based on GSA Specification HH–I–515C, does not address the smoldering combustion problem. The smoldering combustion test in the amendment uses a lighted cigarette as the ignition source. If smoldering is likely to occur with the test material, the lighted cigarette has a sufficiently high temperature (approximately 700°C in the very small glowing region) to initiate smoldering. The test method is intented to determine whether the smoldering will continue in the insulation if smoldering has started. In order to pass the test, the test specimen must have a weight loss of less than or equal to 15 percent of the initial weight of the specimen and must not exhibit flaming combustion. The weight loss requirement is based on data showing that, if a product does not exhibit smoldering tendency, the weight loss of the specimen would be 1 to 4 percent, while if the product smolders the weight loss would be from 30 to 35 percent or higher. According to NBS, because of the nature of the test results, a weight loss criterion midway between these values is reasonable. The flaming combustion criterion was also chosen as an appropriate criterion to eliminate the most severe failure situation. The Commission agrees with the NBS

conclusion that the smoldering combustion test requirement will ensure that insulation materials have some resistance to smoldering. This would represent an improvement over the present interim standard, which does not contain any test requirement that is designed to ensure that insulation materials have some resistance to smoldering.

Requirements and test procedures for critical radiant flux. The present interim standard, based on GSA Specification HH–I–515C, uses the Steiner tunnel test method (ASTM E–84) to assess flame resistance. This test method applies a fixed orientation and exposure for all materials tested, regardless of the end-use configuration of the product. In the technical rationale prepared for the Commission, NBS examined the Steiner tunnel test method of HH–I–515C and concluded that this test method is inappropriate for testing cellulose insulation installed on the floor of an attic. According to NBS, cellulose insulation is not normally applied over a metal screen and is not likely to be exposed to flames from below, as is done in the Steiner tunnel test. In addition, NBS stated that in a typical fire, the cellulose insulation is not subjected to a 5,000/Btu/min fire and/or a wind velocity of 240 ft/min, as is done in the Steiner tunnel test. According to NBS the Steiner tunnel test has been shown to be invalid for low density fire retardant treated plastic foams, so that the applicability and appropriateness of this test method for other low density materials is also questionable. According to NBS, cellulose insulation that has not been treated with fire retardant chemcials has been reported to have flame spread classifications from 50 to 120 when tested in the Steiner tunnel. However, in actual fire situations these materials burn more rapidly than plywood having supposedly less flame resistant flame spread classifications, ranging from 150 to 200. The Commission agrees with these conclusions by NBS.

Unlike the Steiner tunnel test, the requirements and test procedures for critical radiant flux in the amendment are intended to address the hazard scenario where insulation that is installed on the floor of the attic in still air and exposed to radiation from the roof is subjected to a small ignition source. According to NBS, cellulose insulation in this end-use configuration could become involved in such a hazard scenario. In this common end-use configuration, cellulose insulation is applied between and over floor joists in an attic, where the air is relatively still and the most severe exposure is likely to develop during periods of elevated outdoor temperatures plus solar radiation. A small ignition source, such as a dropped match or a carelessly applied propane torch, would be typical ignition sources.

The test method in the amendment involves a radiant exposure varying from 0.1 to 1.1 W/cm^2, corresponding to the differences between direct solar radiation in the summer and the irradiance on the floor from a moderately severe flaming fire on the ceiling. Although the test method was originally developed for evaluating flooring systems in corridors that are exposed to radiation from fully developed fires in adjoining rooms, the test method was adapted for cellulose insulation. The test method provides that the cellulose insulation is exposed to a graded irradiance and ignited with a pilot burner at the high flux end of the specimen. The flux at the farthest point where the burning extends is the critical radiant flux. The amendment requires cellulose insulation to have a critical radiant flux of greater than or equal to 0.12 W/cm^2.

The Commission agrees with the NBS conclusion that this test requirement represents a minimum level for safety. NBS obtained the test requirement by estimating attic temperatures and adding a safety factor. If insulation meets the test requirement, then a fire should not propagate in the attic insulation. NBS has conducted large scale attic mock-up tests which support the attic floor radiant panel test and the criterion for passing the test. According to NBS, Underwriters Laboratories has conducted tests which lead to the conclusion that cellulose insulation meeting the test requirements resists flame propagation under the highest ambient temperature conditions of the attic simulation fire test.

The NBS technical rationale points out that there is limited data to support a correlation between the critical radiant flux measurement used in the amendment and the flame spread classification measurement obtained in the present interim standard. The flame spread classification of 25 required to pass the present interim standard may be either above or below the critical radiant flux of 0.12 W/cm^2 that would be required to pass the amendment.

Test Method Precision for Flame Resistance. As part of the development of the flammability test methods for HH–I–515D, NBS conducted an interlaboratory program to evaluate the repeatability and reproducibility of the flame resistance test methods for cellulose insulation. The results of this study are in a report titled, "Interlaboratory Evaluation of the Attic Flooring Radiant Panel Test and Smoldering Combustion Test for Cellulose Thermal Insulation", J. Randall Lawson, Center for Fire Research, National Bureau of Standards, January 1979. A copy of this study is available in the Office of the Secretary of the Commission.

The results of the interlaboratory program for the critical radiant flux determination showed that the pooled coefficient of variation for repeatability between test results in the same laboratory was 12 percent and the average coefficient for reproducibility between test results in different laboratories was 21 percent. According to NBS, these values are not significantly greater for cellulose insulation than for other materials. In addition, these values compare favorably with precision estimates available from other standard fire tests.

For the smoldering combustion test, eight of ten laboratories agreed for six of the seven materials tested. Seven of ten laboratories agreed on the seventh material. Although, as a result of the split test results, NBS did not place the data for the smoldering combustion test through a rigorous statistical analysis, agreement among the laboratories was relatively good. According to NBS, some variation in laboratory procedures may have contributed to the split test results.

Based on the information obtained from the interlaboratory study, NBS concluded that there is reasonable assurance that there will be consistent results from different laboratories evaluating the same material for compliance with the smoldering combustion and radiant panel tests. The Commission agrees with this conclusion.

Test procedures and requirements for corrosiveness (§§ 1209.3(a) and 1209.5). The Commission has the following information that supports the determination that the corrosiveness requirements and test procedures of the amendment are necessary to protect the public: In section 2(a)(4) of Pub. L. 95–319, Congress found that a mandatory interim standard is reasonably necessary to eliminate or reduce an unreasonable risk of injury to consumers from corrosive cellulose insulation. During the Congressional hearings concerning Pub. L. 35–319 corrosion failures were identified in some metal buildings and in plumbing in some residential structures. These failures were attributed to cellulose insulation treated with selected flame retardant chemicals. Since cellulose insulation

may come in contact with a variety of metals in residential construction such as electrical outlet boxes, conduits, copper and ferrous plumbing lines, structural members, and gas lines, the potential for corrosion failures may exist. The Commission believes that Congress concluded there is an unreasonable risk of injury from corrosiveness associated with cellulose insulation based on these factors. In the *House Report,* the House Committee stated that many fire retardant chemicals added to cellulose insulation may be corrosive and could present a risk of serious structural damage to a home (H.R. Rept. No. 95–1116, 95th Cong. 2d Sess. 3 (1978)).

The evaluation of the corrosiveness of cellulose insulation has in the past been assessed by use of the test method in HH–I–515C, which is the test method in the present interim standard. On June 15, 1978 GSA adopted HH–I–515D, which includes revisions to the test method for corrosiveness in HH–I–515C.

The test procedure for HH–I–515C and HH–I–515D consists of placing coupons of aluminum, steel, and copper in cellulose insulation saturated with water. The metal coupon-cellulose insulation composites are placed in a forced-air humidity chamber at high humidity. After a given period of time corrosiveness is evaluated by the presence of perforations in the coupons.

The major revisions to HH–I–515C included in HH–I–515D are the elimination of the seven day subjective evaluation which established the need for extended 30 day testing in HH–I–515C, and the substitution of a single 14 day exposure as specified in HH–I–515D.

The corrosiveness test procedures in HH–I–515D, also differ from the test procedures in the present interim standard in the procedure for preparing the metal coupons and insulation specimens, the type of coupons used in the test, and the coupon post-cleaning. NBS has prepared a critique of the corrosiveness test methods for the present interim standard and the amendment based on HH–I–515D. A copy of the this critique is available in the Office of the Secretary of the Commission. Based on the NBS critique, the Commission has included several changes to the corrosiveness test procedures of HH–I–515D in the amendment. These changes are explained in greater detail in the section of this notice titled: *III. Commission Changes to the Flame Resistance and Corrosiveness Provisions of HH–I–515D.* The most significant changes involve improvements for cleaning and handling the test coupons so that the test is conducted on metal coupons that are free of contaminants; preparation of the test specimens to address variability due to possible separation of dry chemicals from the insulation, to improve the homogeneity of the test specimens, and to ensure continuity between composite specimens; and changes to avoid moisture evaporation from the specimens after they have been prepared. NBS has evaluated and concurred in these changes.

Based on presently available information, the Commission believes that the corrosiveness requirements and test procedures in the amendment are suitable for discriminating between corrosive and non-corrosive cellulose insulation and are a significant improvement over the requirements and test procedures of the present interim standard. The Commission believes that the test procedures in the amendment should be more reproducible than the procedures in the present interim standard, since the proposed amendment has eliminated much of the subjectivity and other sources of potential variability in the present interim standard.

B. Determination Whether the Amendment Would Create an Undue Burden

At the present time, the Commission has the following information regarding the degree of burden of the amendment on persons subject to the interim standard.

The Commission staff has prepared an economic analysis of the potential economic impacts of the amendment. This economic analysis is based on research conducted for the Commission. a copy of the Commission's Economic Analysis dated December 6, 1978 and a final copy of the research report dated November 29, 1978 (revised May 11, 1979) is available in the office of the Secretary of the Commission. The economic analysis assesses the incremental impact of the amendment relative to the interim standard that is presently in effect.

In assessing the potential burden of the amendment, the Commission considered the following factors: the possible need for manufacturers to alter chemical formulations from those currently being used to meet the present interim standard, as well as the need to make other changes to the product meeting the present interim standard; increased technical knowledge and skill required for some firms to maintain proper chemical formulation; increased chemical costs; increased retail prices; possible adverse effects on the quality or availability of cellulose insulation; labeling costs; and possible burdens presented by testing and certification costs as well as the effective date.

The present interim standard, based on GSA Specification HH–I–515C, was published on August 8, 1978 and became effective September 8, 1978. At the time the present interim standard became effective, the Commission did not have information showing exactly how many cellulose insulation manufacturers were making insulation that complied with HH–I–515C or information showing how many manufacturers would be able to make insulation that met the requirements of the present interim standard. Estimates by industry representatives of the number of manufacturers who would be able to comply with the present interim standard varied greatly, from virtually no manufacturer to virtually every manufacturer.

The Commission has been enforcing the present interim standard since September 8, 1978. From its experience in enforcing the present interim standard during this period of time, the Commission has found that fifty percent of the cellulose insulation firms in business were making insulation that complied with the present interim standard without requiring further modifications. Of the firms who were not complying with the present interim standard, the Commission has estimated that most of these firms are capable of meeting the present interim standard with only relatively minor modifications to their product. At the present time, the Commission believes that only a small percent of the non-complying firms in business would experience major problems in meeting the requirements of the present interim standard.

The Commission believes that the ability of manufacturers to comply with the present interim standard is important in assessing the potential burden of the amendment, since available information indicates that the burden of complying with the amendment may not be great for most manufacturers capable of meeting the present interim standard. Available information indicates that the amendment would require only small modifications to cellulose insulation that meets the present interim standard. Manufacturers may find it necessary to alter their present formulation of chemicals added to the insulation, and may require technical knowledge and skill in discovering and maintaining a more precise chemical formulation. however, many firms who are complying

with the present interim standard would not be required to purchase or install new equipment in order to make a product that will comply with the amendment.

Because manufacturers may need to modify the chemical formulation of the product, many manufacturers are uncertain that their product will meet the amendment until testing is completed. At the present time many firms have begun testing their product to determine what changes will be needed to meet the amendment. Until testing is completed, these firms will not have an exact estimate of the burden of the amendment. Some firms, mainly small firms, have indicated to the Commission that they are now less certain of their ability to meet the amendment than they were last fall. However, approximately 50 manufacturers now claim to be producing a product that meets the requirements of HH–I–515D, on which the amendment is based.

Based on presently available information, the Commission believes that, in general, the amendment would increase chemical costs by one or two percent, possibly higher for particular manufacturers depending on the type and quantity of fire retardant chemicals being used at the time. The Commission believes that the amendment will have only a nominal impact on retail prices of approximately one percent, so that a consumer would pay $1 to $2 more to insulate a 1200 square foot attic to a value of R–19. This estimate is based, in part, on the experience of manufacturers who claim to be meeting HH–I–515D, and is expected to result primarily because of increases in chemical costs. Manufacturers who experience greater increases in chemical costs are not likely to be in a position to pass the extra cost on to the consumer because of competitive pressures.

Because the chemical loading that would be necessary to meet the requirements of the amendment is similar to that loading required by the amendment should not influence the quality or the thermal properties of the insulation. As a result, an additional amount of insulation should not be necessary to achieve the appropriate thermal resistance for any given application.

The availability to consumers of cellulose insulation is not likely to be affected by the amendment. At the present time, approximately 50 manufacturers, mostly large manufacturers, claim to meet HH–I–515D, on which the amendment is based. The Commission has received estimates that the 40–45 largest manufacturers account for over fifty percent of the cellulose insulation marketed. Based on this factor and the consideration that production capacity utilization of the industry is presently extremely low, the Commission does not believe that the amendment will adversely affect the availability of cellulose insulation.

The Commission estimates that the labeling requirement of the amendment will have a minimal economic impact on all but a few manufacturers, since this provision would not require manufacturers and private labelers to alter the product and since manufacturers and private labelers are currently required to label their product under the present interim standard. The Commission believes that the effective date of October 16, 1979 will allow most manufacturers and private labelers time to draw down inventories of bags with non-complying labels and thereby limit the need for hand-stick on labels. At worst, if inventories are not depleted and hand-stick on labels are used, the Commission estimates that these labels would add approximately 2½ cents to the cost of each bag of insulation, as well as an application cost of at most 4 cents per bag during the limited production period needed to deplete inventories.

Testing and certification costs resulting from the Commission's certification requirements (issued elsewhere in this issue of the **Federal Register**) will vary depending on the size and technical competence of the manufacturer or private labeler. In general, costs resulting from the certification rule will not be burdensome since the rule leaves manufacturers with a great deal of flexibility concerning testing and recordkeeping. The costs of meeting the qualification and production testing requirements will vary among firms, depending on the cost of equipment for tests selected, the frequency of testing, and the need for skilled personnel to conduct the test selected. If a manufacturer were to qualify his product by using the specific tests in the standard, the costs would be under $1000. A firm who chooses to obtain a certification label from a commercial laboratory will have higher testing costs, since the costs for a testing program leading to a certification label from a commercial testing laboratory is approximately $3,000. The recordkeeping costs associated with the certification rule will not be significant since most manufacturers should be able to incorporate the required recordkeeping into their present systems with little difficulty. (The potential economic impact of the certification rule is also discussed in the preamble of the certification rule.)

The Commission believes that the October 16, 1979 effective date is reasonable and will not be burdensome to most manufacturers. Some manufacturers who have waited until publication of the amendment to begin testing and reformulation of their products may have only one opportunity to test their products before the effective date if these manufacturers use an outside testing organization to conduct their tests. However, information available to the Commission indicates that many manufacturers have begun testing and reformulation months before publication of the amendment. If the Commission were to delay the effective date by several months, this delay could have an adverse effect on many manufacturers who are currently meeting the present interim standard and GSA Specification HH–I–515D. These manufacturers would then be faced with the burden of testing and qualifying their product to the Commission's present interim standard and HH–I–515D for a longer period of time. (The General Services Administration (GSA) and the Department of Housing and Urban Development (HUD) presently require cellulose insulation manufacturers to meet the provisions of HH–I–515D when making insulation for purchase by the federal government or for use in federal housing programs.) Extending the effective date beyond October 16, 1979 would also mean that the amendment would not be in effect for the peak purchasing season for cellulose insulation. Many manufacturers have expressed their desire that the amendment become effective as soon as possible to assist in marketing their product.

At the present time, the Commission does not believe it is possible to provide an accurate estimate of the number of firms that are likely to go out of business solely because of the amendment. The difficulty in providing a certain estimate arises because many firms themselves have not completed testing and do not presently know the true costs to their firms of meeting the amendment. In addition, the decision whether to remain in business may be more dependent on the future demand situation for cellulose insulation than on the requirements of the amendment. If the demand for cellulose insulation does not increase significantly this fall, many manufacturers are likely to leave the industry regardless of whether they can comply with the amendment. The future demand situation for cellulose insulation

is uncertain at the present time. Available information shows that between 1977 and 1978, the production of cellulose insulation decreased 66 percent. Demand for cellulose insulation has declined significantly since 1977 levels. Information shows that the demand for cellulose insulation should remain between 400 million and 550 million pounds per year during most of the next decade; however, these figures could vary. Based on the most current information concerning compliance with the present interim standard and the expectations of manufacturers of their ability to meet the requirements of the amendment, the Commission estimates that approximately 100 small companies, with a total of 500 workers, may leave the industry after the amendment is issued. These estimates are derived from industry expectations that are based on very limited data.

The Commission has considered the information discussed above showing that the amendment is necessary to protect the consumer and assessing the potential burden on persons subject to the amendment. The Commission has also considered the information presented by the commentors on these issues.

Many commentors supported the issuance of the amendment. The commentors also made numerous recommendations for improving the test procedures and methods of the amendment, as discussed earlier in this notice, and many of these suggestions were adopted by the Commission. None of the commentors who opposed issuing the amendment presented information demonstrating that the amendment is not necessary to protect consumers, or would unduly burden persons subject to it.

In requiring the present interim standard, Congress in Pub. L. 95–319 concluded that a standard is needed to protect the public from the unreasonable risk of injury from fires and corrosion associated with cellulose insulation. The commentors who oppose the issuance of the amendment have not presented information showing that the requirements and test procedures of the present interim standard provide greater protection to the consumer than the requirements and test procedures of the amendment. The commentors who oppose the amendment also have not presented information showing that the provisions of the amendment, including the label and effective date, are unduly burdensome in that they would unduly affect the ability of manufacturers to market the product, or would unduly affect the availability, quality, or price of the product.

The Commission believes that available information shows that the flame resistance provisions of the present interim standard are unlikely to provide as great a degree of protection as the flame resistance provisions of the amendment. The Steiner tunnel test method of the present interim standard, unlike that attic floor radiant panel test method of the amendment, has not been shown to be an appropriate method of testing cellulose insulation installed on attic floors. The attic floor radiant panel test of the amendment addresses the hazard scenario, involving a common end-use configuration, where cellulose insulation that is installed on the floor of an attic in still air and exposed to radiation from the roof is subjected to a small ignition source.

Available information shows that the Steiner tunnel test of the present interim standard has a coefficient of variation for reproducibility that is significantly higher than that for the attic floor radiant panel test, making it less likely that consistent tests will be obtained with the Steiner tunnel test. The available information also shows that smoldering is the most likely hazard associated with cellulose insulation. Unlike the present interim standard, the amendment includes a requirement and test procedure, the smoldering combustion test, to determine whether smoldering will continue in insulation. Available information also does not show that the corrosiveness provisions of the present interim standard will provide a greater degree of protection to consumers than the corrosiveness provisions of the amendment. The corrosiveness test procedures and requirements of the amendment contain improvements in the method for cleaning and handling the test coupons and improvements in the preparation of test specimens to eliminate variables. The corrosiveness test of the amendment is also less subjective than the present test, and is of shorter duration and is easier to conduct and less expensive than the present test. As a result, the Commission believes that the corrosiveness test of the amendment is less burdensome than the corrosiveness test of the present interim standard.

In considering the potential burden of the amendment, the Commission does not believe that the available information shows that this burden would be undue. At this time approximately 50 manufacturers claim to be able to meet the provisions of GSA HH–I–515D, on which the amendment is based. Available information shows that the amendment would increase chemical costs to manufacturers, in general, by only 1 to 2 percent, and would have little impact on retail prices or the availability of insulation. Since the chemical loading necessary to meet the requirements of the amendment is similar to that required to meet the present interim standard, the chemical loading should not affect the thermal properties of the insulation. As discussed earlier in this Notice, the potential economic costs associated with labeling, qualification and certification are not expected to be great. In addition, available information does not show that the effective date is unreasonable. Some manufacturers may decide to go out of business rather than make an additional investment in acquiring skill and equipment to meet the requirements of the amendment. However, uncertain future demand for cellulose insulation, rather than the amendment, may be the critical factor for those companies who are considering leaving the industry.

Having evaluated all of the available information, the Commission does not believe that this information shows that the amendment is not necessary to protect the consumer or would create an undue burden on persons subject to the interim standard. The Commission has consulted with the Secretary of Energy concerning the amendment. The Secretary of Energy has recommended that the Commission issue the amendment to the interim standard for cellulose insulation. In light of the Commission's affirmative obligation resulting from Pub. L. 95–319 to issue the amendment, and in light of the inability of the Commission to determine that the amendment is not necessary or would present an undue burden, the Commission concludes that the amendment should be issued. Accordingly, the Commission is issuing the amendment to the interim standard.

VI. Environmental Considerations

The Commission has examined the potential environmental impacts of the amendment, including the potential environmental impact that could result from increased use of urea-formaldehyde insulation and increased demand for boric acid. (These potential environmental impacts are also discussed in the preamble to the certification rule, published elsewhere in this issue of the **Federal Register**.) In the proposed amendment the Commission solicited comments on the potential environmental impacts of the amendment. The Commission did not

receive any comments on this issue. Based on an environmental assessment of the amendment, the Commission believes that the amendment will have no significant environmental impact affecting the quality of the environment that would require the Commission to prepare an environmental impact statement. A copy of the environmental assessment is available in the Office of the Secretary of the Commission.

VII. Opportunity to Seek Judicial Review

Section 35(c)(2)(G) of the act, as amended by Pub. L. 95–319, provides that the provisions of section 11 do not apply to judicial review of any amendment to the interim standard. For the purposes of fairness to all interested parties concerning the opportunity to seek judicial review of any final amendment, the Commission believes it is important to set a specific date and time at which the final amendment is considered to be final agency action under section 704 of the Administrative Procedure Act (5 U.S.C. 704). The Commission believes that this date and time will be at one o'clock p.m. Eastern Daylight Time, the date the final amendment is published in the **Federal Register**. Since the Commission is publishing this amendment on the latest date provided by statute for publication, this date is earlier than the date that was suggested in the proposal (44 FR 12889, March 8, 1979). The Commission believes that this date and time is reasonable since it will provide all interested parties an equal and fair opportunity to review the final amendment before deciding whether they wish to seek judicial review. This date is substantially before the delayed effective date of October 16, 1979.

VIII. Conclusion

In accordance with the provisions of the "Emergency Interim Consumer Product Safety Standard Act of 1978", Pub. L. 95–319, the Commission issues the revised flame resistance and corrosiveness provisions of GSA Specification HH–I–515D, along with the changes described below, as an amendment to the Commission's interim standard for cellulose insulation.

Therefore, pursuant to provisions of the Consumer Product Safety Act, as amended, (sec. 35(c)(2), Pub. L. 95–319, 92 Stat. 388–389, 15 U.S.C. 2082), the Commission amends the Interim Safety Standard for Cellulose Insulation by substituting a new Part 1209 of Title 16 CFR, for the present 16 CFR Part 1209 published at 43 FR 35240 (August 8, 1978), as follows:

PART 1209—INTERIM SAFETY STANDARD FOR CELLULOSE INSULATION

Subpart A—The Standard

Sec.

1209.1 Scope and application.
1209.2 Definitions and measurements.
1209.3 General requirements.
1209.4 Test procedures for settled density.
1209.5 Test procedures for corrosiveness.
1209.6 Test procedures for critical radiant flux.
1209.7 Test procedures for smoldering combustion.
1209.8 Procedure for calibration of radiation instrumentation.
1209.9 Labeling requirement.
1209.10 Certification and enforcement.
1209.11 Effective date.

Authority: Sec. 35(c)(2), Pub. L. 95–319, 92 Stat. 388–389; (15 U.S.C. 2082).

§ 1209.1 Scope and application.

(a) *Scope.* This Part 1209, an interim consumer product safety standard, prescribes flame resistance and corrosiveness requirements for cellulose insulation that is a consumer product. These requirements are intended to reduce or eliminate an unreasonable risk of injury to consumers from flammable and corrosive cellulose insulation. The requirements are based upon the flame resistance and corrosiveness requirements of General Services Administration Specification HH–I–515D.

(b) *Application.* This Part 1209 shall apply to cellulose insulation that is a consumer product, that is, cellulose insulation produced or distributed for sale to, or for the personal use, consumption, or enjoyment of consumers in or around a permanent or temporary household or residence, a school, in recreation, or otherwise. The interim standard applies to cellulose insulation that is produced or distributed for sale to consumers for their direct installation or use, as well as cellulose insulation that is produced or distributed for installation by professionals. This Part 1209 applies only to cellulose insulation manufactured after October 15, 1979.

§ 1209.2 Definitions and measurements.

(a) As used in this Part 1209, "Cellulose insulation" means cellulosic fiber, loose fill, thermal insulation that is suitable for blowing or pouring applications.

(b) The definitions given in section 3 of the Consumer Product Safety Act are applicable to this Part 1209.

(c) For the purposes of conformance with the technical requirements of this standard, the figures are given in the metric system of measurement. The inch-pound system approximations of these figures are provided in parentheses for convenience and information only. For numerical quantities for which no specific tolerances are given, the tolerance shall be one half of the unit value of the last significant digit given in the dimension. Where numerical quantities are given without tolerances in both the metric and inch-pound system of measurements, the tolerance shall be one half of the last significant digit of the metric equivalent of the numerical quantity.

(d) The specifications and dimensions in the test methods below are given in metric units, with the English equivalents in parentheses. For enforcement purposes the Commission will use metric units.

§ 1209.3 General requirements.

(a) All cellulose insulation to which this interim standard applies, as described in § 1209.1, shall be noncorrosive when tested in accordance with the test procedures at § 1209.5 and evaluated using the criteria at § 1209.5(c). This means that after the product is tested, the six metal coupons used in the test shall not have any perforations (excluding notches extending into the coupon 3 mm or less from any edge) when the coupons are observed over a 40–W appliance light bulb.

(b) All cellulose insulation to which this interim standard applies, as described in § 1209.1, shall have a critical radiant flux equal to or greater than 0.12 W/cm^2 for each of the three specimens when tested in accordance with the test procedures at § 1209.6.

(c) All cellulose insulation to which this interim standard applies, as described in § 1209.1, shall have no evidence of flaming combustion and shall also have weight loss of 15 percent or less of the initial weight, for each of the three specimens, when tested in accordance with the test procedures at § 1209.7.

(d) All containers of cellulose insulation to which this interim standard applies, as described in § 1209.1, shall have a labeling statement in accordance with the labeling requirements at § 1209.9.

§ 1209.4 Test procedures for determining settled density.

The settled density of lose fill insulation must be determined before the corrosiveness test (1209.5) and the smoldering combustion test (1209.7) can be performed. This section describes the

procedure for determining the settled density of loose fill insulation.

(a) *Apparatus and materials:*

(1) An insulation specimen container with a flat bottom and an inside diameter of 15.0±1 cm, straight sides [without a flared lip or spout, (Apparatus #1)]. The height of the beaker shall be such that the distance between the bottom of the cyclone and the top edge of the beaker is 8.5 cm±1.0 cm. (3.39 in±.39 in).

(2) A flat-rigid disc with a total weight of 75±5 g (2.65±0.18 oz) and of a suitable diameter to fit loosely into the specimen container. Weight may be added to the center of the disc to bring the total weight to the required 75±5 g (Apparatus #2).

(3) A balance of 2 kg (4.4 lbs) capacity accurate at least to 0.2 g (0.007 oz) (Apparatus #3).

(4) Blower apparatus, two units (supply and overflow) meeting the following specifications: (The Commission staff has found that a Breuer Electric Manufacturing Co., Model 98805 blower is suitable for this purpose, although other blowers may be suitable.) (Apparatus #4).

(i) Each blower apparatus shall be capable of blowing an average of 272.2 kg (600 lbs.) of insulation per hour.

(ii) Each blower apparatus shall have a nominal air flow of 2.1 cm^3/min. (75 ft^3/min.)

(iii) Each blower apparatus shall have a nominal motor speed of 16,450 revolutions per minute at 115 VAC.

(5) A shaker unit capable of shaking 4.5 kg (10 lb) of weight with a vertical motion of 0.5 g Root Mean Square (RMS) acceleration at an approximate frequency of 9 Hertz (Hz) and displacement of approximately 1.17 cm ($1\frac{3}{32}\pm\frac{1}{32}$ in.) ±.08 cm peak to peak. (The Commission staff has found that a Tyler Industries, Portable Sieve Shaker Model Rx–24 is suitable for this purpose, although other shakers may be suitable.) (Apparatus #5).

(6) Fill chamber with inside dimensions of 45.7 cm (18 in) high × 38.1 cm (15 in) wide × 38.1 cm (15 in) deep, with covered openings that will allow a radiant panel tray to be slid through the chamber, (see Figure 1 for details) (Apparatus #6).

(7) A cyclone receiver (see Figure 2 for complete details). (Apparatus #7).

(8) Various lengths of nominally 2-inch diameter hose (see Figure 1 for details), as follows:

(i) A supply source hose, 274.3±5.1 cm (9 ft±2 in) (Apparatus #8(i)).

(ii) A cyclone receiver hose, 182.9±5.1 cm (6 ft±2 in) (Apparatus #8(ii)).

(iii) A fill chamber exit hose, 91,.4±5.1 cm (3 ft±2 in) (Apparatus #8(iii)).

(iv) An overflow exhaust hose, length as needed (Apparatus #8(iv)).

(9) Blower Control(s) capable of operating the two blowers at 40 volts RMS. As an example, a variac for each of the two blowers with sufficient rating to operate at 40 volts and 12 amperes RMS would be acceptable (Apparatus #9).

(10) An insulation holding container to hold a sufficient quantity of insulation to fill the specimen container four times.

(11) A garden rake, 50.8 cm (20 in) wide (Apparatus #11).

(12) A shovel (Apparatus #12).

(b) *Conditioning:* Specimens shall be conditioned to equilibrium at 21±5° C (69.8±9° F) and 50±5 % relative humidity. A less than 1% change in net weight of the specimen in two consecutive weighings with two hours between each weighing constitutes equilibrium.

(c) *Test specimen preparation:*

(1) *Insulation intended for pneumatic applications.* If the insulation is intended for pneumatic applications, the test specimens shall be prepared in the following manner:

(i) If ambient laboratory conditions are different from the conditioning requirements specified in (b) above, begin testing the specimen for settled density within 10 minutes after it has been removed from the conditioned area.

(ii) Pour the conditioned insulation into the holding box (Apparatus #10) in sufficient quantity to fill the specimen container (Apparatus #1 shown in Figure 1) four times. Manually break up any large clumps of material that might cause feeding problems.

(2) *Insulation intended for pouring applications:* If the insulation is intended for pouring applications, the test specimens shall be prepared in the following manner:

(i) If ambient laboratory conditions are different from the conditioning requirements specified in (b) above, begin testing 10 minutes after it has been removed from the conditioned area.

(ii) Pour loose fill insulation into a simulated attic space until full. The attic space shall be formed by two nominal 2 x 6 (243 cm) (8 ft) long joists placed 40.6 cm (16 in) on center with 1.27 cm (½ in) plywood nailed to the ends and bottom. Fluff the material with a garden rake (Apparatus #11), applyilng a series of small amplitude strokes while moving the rake slowly along the joist. Repeat the fluffing process six times.

(d) *Procedures:*

(1) *Procedures for insulation intended for pneumatic applications.* If the insulation is intended for pneumatic applications, conduct the following procedures:

(1) The test shall be conducted in an area conditioned to the requirements of § 1209.4(b).

(ii) The apparatus shall be set up as shown in Figure 1. (Apparatus #9 and #10 are not shown in Figure 1, but are described at § 1209.4(a)). Connect one end of the supply source hose (Apparatus #8.i) to the intake of the supply blower (Apparatus #4). The other end will be used to pick up insulation from the holding container (Apparatus #10). Connect one end of the cyclone receiver hose (Apparatus #8.ii) to the outlet of the supply blower and the other end to the cyclone receiver (Apparatus #7). Connect one end of the fill chamber exit hose (Apparatus #8.iii) to the intake of the overflow blower (Apparatus #4) and the other end to the fill chamber (Apparatus #6). The fill chamber shall be placed on a flat and level surface. Connect one end of the variable length overflow exhaust hose (Apparatus #8.iv) to the outlet of the overflow blower. The other end should be conveniently placed to reduce insulation dust in the test area.

(iii) Weigh the empty insulation specimen container and record its weight.

(iv) Place the empty insulation specimen container in the fill chamber (Apparatus #6) centered under the cyclone reciever (Apparatus #7), and close the front cover.

(v) Adjust the blower control(s) (Apparatus #9) such that the supply and overflow blowers will operate at a no load voltage of 40 volts RMS.

(vi) Turn on the blowers simultaneously and proceed to fill the insulation specimen container by picking up material from the holding container using the supply source hose.

(vii) The container may fill unevenly, i.e. a void may tend to form off center in the container. If this occurs, stop the blowing process and rotate the container 180 degrees and continue the blowing process until the container just begins to overflow. If, for any reason, the filling process is interrupted for more than one minute or for more than the one time allowed to rotate the container, begin the process again.

(viii) Gently screed the excess material using a straight edge so as to leave a uniform surface of the insulation flush with the top of the container.

(ix) Weigh the filled and leveled container and record the weight. Take care not to bump or jar the container so

as not to introduce any extraneous settling of the insulation.

(x) Cover the container to prevent spilling and secure the container to the shaker. Operate the shaker for a period of 5 minutes±15 seconds.

(xi) Remove the container from the shaker and uncover, taking care not to bump or jar it. Lower the disc (Apparatus #2) very slowly into the container until it starts to contact the insulation. At this point, release the disc and allow it to settle onto the insulation under its own weight.

(xii) Measure the volume of the space occupied by the settled insulation using the bottom edge of the disc as the upper datum point. If the disc is not level, measure the high and low points of the bottom of the disc and average the readings and use this as the height measurement in calculating the volume (V_s). This settled insulation volume and insulation weight (w) shall be used to calculate the settled density.

(xiii) Repeat this procedure [steps (i through xi)] using another specimen of the insulation until four settled densities are obtained for a given material. Then average these figures to arrive at a final settled density.

(2) *Procedures for insulation intended for pouring applications.* If the insulation is intended for pouring applications, conduct the following procedures:

(i) Weigh the empty insulation specimen container and record its weight.

(ii) Using a shovel (Apparatus #12) remove insulation from the simulated attic space and place it into the specimen container until the container just begins to overflow.

(iii) Follow steps (vi) through (xii) as specified under *Procedures for insulation intended for pneumatic applications.*

(iv) Repeat this procedure (steps (i) through (iii)) using another specimen of the insulation until four settled densities are obtained for a given material. Then average these figures to arrive at a final settled density.

(e) *Insulation intended for pouring and pneumatic applications.* If the insulation is intended for both pouring and pneumatic applications, or if it is uncertain whether the insulation will be poured or installed pneumatically, the insulation shall be tested for settled density using the test specimen preparation and test procedures at § 1209.4 (c) and (d) for each of the applications. The larger of the two settled density values shall be used in performing the corrosiveness test at § 1209.5 and the smoldering combustion test at § 1209.7.

(f) *Calculations:*

Calculate the settled density of each specimen using the following formula:

Settled Density in $kg/m^3 = W/V_s$, where

W = combined weight of the container and insulation in grams, minus the weight of the container in grams.

V_s = volume of insulation in liters after shaking.

§ 1209.5 Test procedures for corrosiveness.

This section prescribes the procedures for determining the corrosiveness of cellulose insulation. Cellulose insulation shall be tested for corrosiveness using the measured settled density, obtained by following the test procedure at § 1209.4, to calculate the amount of distilled or deionized water to add to the test specimens. Determination of corrosiveness shall be in accordance with the following test procedure:

(a) *Apparatus and materials.* (1) Humidity chamber. A forced-air humidity chamber capable of maintaining 48.9± 1.7°C (120±3°F) and 97 ±1.5 percent relative humidity.

(2) Crystallizing dishes. Six glass crystallizing dishes, 90 mm (3.54 in) diameter by 50 mm (1.9 in) height.

(3) Test coupons.

(i) Two aluminum coupons. 3003 bare aluminum, zero temper.

(ii) Two copper coupons. ASTM B 152, type ETP, Cabra No. 110 soft copper.

(iii) Two steel coupons. Low carbon, commercial quality, cold rolled, less than 30 carbon content, shim steel.

Each coupon shall be 50.8 by 50.8 mm (2 by 2 in) by 0.076 mm (0.003 in) thick metal free of tears, punctures, or crimps.

(4) Test specimens: Six test specimens of insulation shall be used for one test. Each specimen shall weigh 20g (0.7 oz).

(b) *Procedure.* (1) *General procedures for cleaning all metal coupons.* The metal coupons shall be cleaned by the following method:

(i) At no time during the fabrication, cleaning or testing shall the metal coupons be touched by ungloved hands.

(ii) Gloves shall be clean and in good condition.

(iii) All chemicals used shall be of American Chemical society reagent grade or better, free from oily residues and other contaminants.

(iv) Water shall be distilled or deionized water.

(v) Handle cleaned coupons only with clean forceps.

(vi) In order to avoid exposing laboratory personnel to toxic fumes, the commission recommends that all cleaning procedures be performed in a fume hood.

(vii) Clean the coupons by vapor degreasing with 1,1,1—trichloroethane for ten minutes. following vapor degreasing, subject the coupons to caustic and/or detergent washing as appropriate. Following caustic or detergent washing, rinse the coupons in flowing water to remove residues. Inspect each coupon for a water-break free surface. (A water-break is a break, separation, beading or retraction of the water film as the coupon is held vertically after wetting. As the coupons are cleaned, the water film should become gradually thinner at the top and heavier at the bottom.) Hot air dry the coupons at 105°C (221° F).

(2) Specimens of cellulose insulation submitted for testing shall be blown, combed, or otherwise mixed to reasonably assure homegeneity in the cellulose insulation test specimens.

(3) Before presaturating each 20g (0.7 oz) test specimen, subdivide it into two 10g (0.35 oz) portions. The quantity of distilled or deionized water to be used for each 10g (0.35 oz) portion shall be determined using the following formula:

$$\text{ml distilled water} = \frac{46}{\text{settled density, } Kg/m^3} \times 75$$

or

$$\frac{2.9}{\text{settled density, } lb/ft^3} \times 75$$

(4) Presaturate each 10g (0.35 oz) portion with the determined amount of water. Place one presaturated 10g (0.35 oz) portion into a crystallizing dish, tamp level using the bottom of a clean suitably sized glass beaker. Place a metal coupon onto the presaturated insulation portion and center it in a horizontal plane. Place the other presaturated 10g (0.35 oz) portion into the crystallizing dish on the metal coupon and tamp the composite specimen (metal coupon plus saturated insulation in the crystallizing dish) to assure an even distribution of this material and to assure good contact of the insulation with the metal. Exercise care in preparing the composite specimens to eliminate air pockets from forming next to the metal coupons.

(5) Do not cover the crystallizing dish. (Care should be taken to avoid evaporation from the composite

specimen while it is being prepared until it is placed in the humidity chamber.) If dripping occurs in the chamber, position a drip guard in the chamber to divert condensation to the chamber floor. Repeat the above for the other metal coupons. Place all six composite specimens into the humidity chamber. The chamber shall be preconditioned to 48.9± 1.7° C (120± 3° F) and 97± 1.5 percent relative humidity. The specimens shall remain in the chamber for 336± 4 hours. (Keep the chamber door open a minimum of time while placing composite specimens in and removing them from the chamber.)

(6) Upon completion of the test disassemble the composite specimens. Thoroughly wash the metal coupons under running water and lightly brush them using a soft nylon bristle brush or equivalent to remove loose corrosion products. Remove the remaining corrosion products from the metal coupons by cleaning them in accordance with the following practices:[1]

(i) Technique #1—Electrolytic Cleaning. This technique can be used for post-cleaning the tested copper, steel and aluminum coupons.

Description: Electrolyze the coupons as follows: Make a solution containing 28 ml of sulfuric acid (specific gravity 1.84), 2 ml of organic inhibitor, e.g. aobut 0.5 g/liter of such inhibitors as diorthotolyl thiourea, quinoline ethiodide, or betanaphthol quinoline may be used, and 970 ml of water. The solution shall be at 75°C (167°F). The anode shall be carbon or lead, and the cathode shall be one metal coupon. The electrolyzing shall run for 3 minutes at a current density of 20 A/dm ^{2}. *Caution:* If lead anodes are used, lead may deposit on the coupon. If the coupon is resistant to nitric acid, the lead may be removed by a flash dip in 1 + 1 nitric acid (plus water). To avoid injury in this and subsequent techniques when mixing acid and water, gradually pour the acid into the water with continuous stirring, provide cooling if necessary.

(ii) Technique #2—Copper. This technique or Technique #1 can be used for post-cleaning the tested copper coupons only.

Description: Make a solution containing 500 ml of hydrochloric acid (specific gravity 1.19), 100 ml of sulfuric acid (specific gravity 1.84), and 400 ml of water. To avoid injury, prepare the solution by slowly adding the sulfuric acid to the water with continuous stirring. Cool, then add the hydrochloric acid slowly with continuous stirring. The solution shall be at room temperature. Dip the coupons in the solution for 1 to 3 minutes.

(iii) Technique #3—Steel. This technique or technique #1 can be used for post-cleaning the tested steel coupons only.

Description: Use one of the following two solutions:

Solution #1. Add 100 ml of sulfuric acid (specific gravity 1.84), 1.5 ml organic inhibitor, and water to make a l liter solution. The solution shall be 50°C (120°F). Dip the coupons in this solution.

Solution #2 (also referred to as Clarke's solution). Add 20g of antimony trioxide and 50 g of stannous chloride to 1 liter of hydrochloric acid (specific gravity 1.19). The solution shall be stirred and be used at room temperature. Dip the coupons in this solution stirring the solution at a rate such that deformation of the coupons does not occur. This dipping shall last for up to 25 minutes.

(iv) Technique #4—Aluminum. This technique or technique #1 can be used for post-cleaning the tested aluminum coupons only.

Description: Make a 1 liter solution by adding 20g of chromic acid, and 50 ml of phosphoric acid (specific gravity 1.69), to water. The solution shall be 80° C (176° F). Dip the coupons in this solution for 5–10 minutes. If a film remains, dip the coupons in nitric acid (specific gravity 1.42) for 1 minute. Repeat the chromic acid dip. Nitric acid alone may be used if there are no deposits.

(7) After cleaning, examine the metal coupons over a 40–W appliance light bulb for perforation.

(c) *Noncorrosiveness.* Noncorrosiveness shall be determined by the absence of any perforations (excluding notches which extend into the coupon 3 mm or less from any edge) on each of the six test coupons when the coupons are observed over a 40–W appliance light bulb.

§ 1209.6 Test procedures for critical radiant flux.

This section provides the test procedure for determining the critical radiant flux of exposed attic floor insulation using a radiant heat energy source.

(a) *Apparatus and description of test procedure.* Test chamber (Figures 3 and 4 subsection (b) of this section). An air-gas fueled radiant heat energy panel or equivalent panel inclined at 30° above and directed at a horizontally-mounted attic floor insulation specimen. The radiant panel generates a radiant energy flux distribution ranging along the approximately 100-cm length of the test specimen from a nominal maximum of 1.0 W/cm.^{2} to a minimum of 0.1 W/cm^2. The test is initiated by open flame ignition from a pilot burner. The distance burned to flame-out is converted to W/cm^2 from the flux profile graph (Figure 8) and reported as critical radiant flux, W/cm^2. Section 1209.8 provides a procedure for calibrating the radiation pyrometer used to standardize the thermal output of the panel.

(b) *Construction and instrumentation of the radiant panel test chamber.* The radiant panel test chamber shall be constructed and instrumented as follows:

(1) The radiant panel test chamber employed for this test shall be located in a draft protected area maintained at 21±3° C (69.8±9° F) and relative humidity of 50±20%. The radiant panel test chamber, (Figures 3 and 4) shall consist of an enclosure 140 cm (55 in) long by 50 cm (19½ in) deep by 71 cm (28 in) above the test specimen. The sides, ends, and top shall be of 1.3 cm nominal (½ in) calcium silicate board, such as Marinite I, 0.74 g/cm^3 (46 lb/ft^3) nominal density, with a thermal conductivity at 177° C (350° F) of 1.11 cal (g)/hr cm^2°C/cm [0.89 Btu/(hr) (ft^2) (°F/in)]. One side shall be provided with an approximately 10 cm x 110 cm (4 x 44 inches) draft tight fire resistant glass window so that the entire length of the test specimen may be observed from ourside the fire test chamber. On the same side and below the observation window is a door which, when open, allows the specimen platform to be moved out for mounting or removal of test specimens. A draft tight, fire resistant observation window may be installed at the low flux end of the chamber.

(2) The bottom of the test chamber shall consist of a sliding steel platform which has provisions for rigidly securing the test specimen holder in a fixed and level position. The free, or air access, area around the platform shall be in the range of 1935–3225 cm^2 (300–500 square in). The top of the chamber shall have an exhaust stack with interior dimensions of 10.2 cm (4 in) wide by 38 cm (15 in) deep by 31.8 cm (12.5 in) high at the opposite end of the chamber from the radiant energy source. The radiant heat energy source shall be a panel of porous refractory material mounted in a cast iron frame, with a radiation surface of 30.5 x 45.7 cm nominal (12 by 18 in). The panel fuel system shall consist of a venturi-type aspirator or equivalent system for mixing gas and air at

[1] These practices are the recommended practices in "ASTM G1—Standard Recommended Practice for Preparing, Cleaning, and Evaluating Corrosion Test Specimens," published by American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103.

approximately atmospheric pressure, a clean dry air supply capable of providing 28.3 NTP (Normal Temperature and Pressure m^3 per hr (1000 standard cubic feet per hour) at 7.6 cm (3.0 in) of water, and suitable instrumentation for monitoring and controlling the flow of fuel to the panel.

(3) The radiant heat energy panel shall be mounted in the chamber 30±0.5° to the horizontal specimen plane. The horizontal distance from the 0 mark on the specimen fixture to the bottom edge (projected) of the radiating surface of the panel is 8.9 cm±0.1 (3½±1/32 in). The panel to specimen vertical distance is 14.0 cm±0.1 (5½±1/32 in) (see Figure 5). The angle and dimensions given above are critical in order to obtain the required radiant flux. The radiation pyrometer for standardizing the thermal output of the panel shall be suitable for viewing a circular area 25.0 cm (10 in) in diameter at a range of about 1.37 m (54 in). It shall be calibrated over the black body temperature range of 490–510° C (914–950° F) in accordance with the procedure described in Section 1209.8. A high impedance voltmeter with a suitable millivolt range shall be used to monitor the output of the radiation pyrometer described. The dummy holder (see Figure 6), shall be constructed from 14 gauge heat-resistant stainless steel (AISI Type 300 (UNA–N08330)) or equivalent thickness 0.198 cm (0.078 in), having overall dimension of 114 cm (45 in) by 32 cm (12¾ in) with a specimen opening of 20 cm (7.9 inches) by 100 cm (39.4 in). Six slots are cut in the flange on either side of the holder to reduce warping. The holder is fastened to the platform with two stud bolts at each end.

(4) The specimen tray (see Figure 7) shall be constructed from 14 gauge heat-resistant stainless steel (AISI Type 300 (UNA–N08330)) or equivalent, thickness 0.198 cm (0.078 in). The depth of the tray is 5.0±0.2 cm (2±5/64 in). The flanges of the specimen tray are drilled to accommodate two stud bolts at each end; the bottom surface of the flange is 2.1±0.1 cm (0.83±0.04 in) below the top edge of the specimen tray. The overall dimensions of the tray and the width of the flanges are not critical and should be chosen so that the tray essentially fills the open space in the sliding platform. Tray must be adequate to contain a specimen at least 100 cm long and 25 cm wide. It is important to note that the zero reference point on the dummy specimen coincides with the pilot burner flame impingement point (see Figure 5).

(5) The pilot burner used to ignite the specimen shall be a propane venturi torch with an axially sysmmetric burner tip having a propane supply tube with an orifice diameter of 0.0076±0.0013 cm (0.003±0.0005 in). In operation, the propane flow is adjusted to give a pencil flame blue inner cone length of 1.3 cm (½ in). The pilot burner is positioned so that the flame generated will impinge on the centerline of the specimen at the zero reference point and at right angles to the specimen length (see Figures 3 and 4). The burner shall be capable of being swung out of the ignition position so that the flame is horizontal and at least 5 cm (2 in) above the specimen plane.

(6) Two 3.2 mm nominal (⅛ in) diameter stainless steel sheathed, grounded junction chromel alumel thermocouples are located in the flooring radiant panel test chamber (see Figures 3 and 4). Thermocouples shall be kept clean to ensure accuracy of readout. The chamber thermocouple is located in the longitudinal central vertical plane of the chamber 2.5 cm±0.1 (1±1/32 in) down from the top and 10.2 cm±0.1 (4 in±1/32) back from the inside of the exhaust stack. The exhaust stack thermocouple is centrally located 15.2±0.1 cm (6±1/32 in) from the top. A temperature indicating device with a range of 100–500° C (212–932° F) may be used to determine the chamber temperatures prior to a test.

(7) An exhaust duct with a capacity of 28.3–85 NTP m^3 per minute (1000–3000 standard cubic feet per minute) decoupled from the chamber stack by at least 7.6 cm (3 in) on all sides and with an effective area of the canopy slightly larger than the plane area of the chamber with the specimen platform in the out position shall be used to remove combustion products from the chamber. With the panel turned on and dummy specimen in place, there shall be no measurable difference in air flow through the chamber stack with the exhaust on or off.

(8) The dummy specimen which is used in the flux profile determination shall be made of 1.9±0.1 cm (¾±1/32 in) 0.74 g/cm^3 (46 lb/ft^3) nominal density calcium silicate board, such as Marinite I (see Figure 6). It is 25 cm (10 in) wide by 107 cm (42 in) long with 2.7±0.1 cm (1 1/16±1/32 in) diameter holes centered on and along the centerline at the 10, 20, 30, 40, 50, 60, 70, 80, 90 cm locations (within ±0.1 cm), measured from the zero reference point at the maximum flux end of the specimen. The total heat flux transducer used to determine the flux profile of the chamber in conjunction with the dummy specimen should be of the Schmidt-Boelter type, having a range of 0–1.5 W/cm^2 (0–1.32 $Btu/ft^2 s$), and shall be calibrated over the operating flux level range of .10 to 1.5 W/cm^2 in accordance with the procedure outlined in Section 1209.8. The incoming cooling water flowing through the instrument shall be 15–25° C (59–77° F). A high impedance voltmeter with a resolution of at least 0.01 mV shall be used to measure the output of the total heat flux transducer during the flux profile determination. A timer shall be used for measuring preheat and pilot contact time.

(c) *Safety procedures.* The possibility of a gas-air fuel explosion in the test chamber should be recognized. Suitable safeguards consistent with sound engineering practice should be installed in the panel fuel supply system. These may include one or more of the following: (1) a gas feed cut-off activated when the air supply fails, (2) a fire sensor directed at the panel surface that stops fuel flow when the panel flame goes out, (3) a commercial gas water heater or gas-fired furnace pilot burner control thermostatic shut-off, which is activated when the gas supply fails, or other suitable and approved device. Manual reset is considered a desirable feature of any safeguard system used. In view of the potential hazard from products of combustion, the exhaust system must be so designed and operated that the laboratory environment is protected from smoke and gas. The operator should be instructed to minimize exposure to combustion products by following sound safety practices, such as ensuring that the exhaust system is working properly and wearing appropriate clothing, including gloves.

(d) *Test specimens.* (1) *Specimens of insulation intended for pneumatic applications.*

(i) Insulation shall be installed into the specimen tray using the blower/cyclone apparatus described in § 1209.4(a).

(ii) Insulation shall be conditioned as described in § 1209.4(b).

(iii) Apparatus #4, 6, 7, 8, 9 and 10 shall be used as described in § 1209.4(d)(1)(i) with the following additional requirements.

(iv) The fill chamber (apparatus #6) shall be equipped with openings in the front and back so that a radiant panel specimen tray can be slid through the fill chamber.

(v) Adjust the blower control(s) (apparatus #9) such that the supply and overflow blowers will operate at a no load voltage of 40 volts RMS.

(vi) Turn on the blowers simultaneously and proceed to fill the fill chamber by picking up material from the box using the supply source hose.

Large clumps of insulation shall be broken by hand before feeding them into the hose. Continue filling the chamber until large amounts of insulation are being drawn into the overflow hose.

(vii) Slowly slide the specimen tray through the fill chamber so that the low flux end of the tray is parallel with the back of the fill chamber filling the tray by sliding the tray forward to allow an excess of insulation to build up in the tray.

(viii) Shut off the blowers and remove the specimen tray and gently screed the insulation so that the insulation is level across the top of the tray. Take care not to compact the insulation or to leave large voids in the material. The tray may now be inserted into the radiant panel.

(2) *Specimens of insulation intended for pouring applications.* Insulation intended for pouring applications shall be poured into the tray until the tray is overfilled and then carefully screeded to the top of the the tray taking care not to compact the insulation or leave large voids in the surface of the material.

(3) *Specimens of insulation intended for pouring and pneumatic applications.* If the insulation is intended for both pouring and pneumatic applications, or if it is uncertain whether the insulation will be poured or blown, the insulation shall be tested using the test procedures at § 1209.6(d) (1) and (2) for each of the applications. Three specimens shall be tested under the test procedure for each application. All of the specimens shall meet the criteria at 1209.3(b) for passing the attic floor radiant panel test.

(e) *Radiant heat energy flux profile standardization.* In a continuing program of tests, determine the flux profile at least once a week. Where the time interval between tests is greater than one week, determine the flux profile at the start of the test series.

(1) Mount the dummy specimen in the mounting frame and attach the assembly to the sliding platform. With the sliding platform out of the chamber, ignite the radiant panel. Allow the unit to heat for 1 hour. The pilot burner is off during this determination. Adjust the fuel mixture to give an air-rich flame. Make fuel flow settings to bring the panel to an apparent black body temperature as measured by the radiation pyrometer, of approximately 500° C (932° F), and bring the chamber to a temperature of approximately 180° C (356° F). When equilibrium has been established, move the specimen platform into the chamber. Allow 0.5 hour for the closed chamber to reach equilibrium.

(2) Measure the radiant heat energy flux level at the 40 cm point with the total flux meter instrumentation. This is done by inserting the flux meter in the opening so that its detecting plane is 0.16–0.32 cm (1/16-1/8 inch) above and parallel to the plane of the dummy specimen and reading its output after 30±10 seconds. If the level is within the limits specified, the flux profile determination is started. If it is not, make the necessary adjustments in the panel fuel flow. A suggested flux profile data log format is shown in Figure 9.

(3) The test shall be run under chamber operating conditions which give a flux profile as shown in Figure 8. The radiant heat energy incident on the dummy specimen shall be between 0.87 and .95 W/cm² (0.77 and .83 Btu/ft² sec) at the 20 cm point, between 0.48 and 0.52 W/cm² (0.42 and 0.46 Btu/ft² sec) at the 40 cm point, and between 0.22 and 0.26 W/cm² (0.19 and 0.23 Btu/ft² sec) at the 60 cm point. Insert the flux meter in the 10 cm opening, following the procedure given above. Read the millivolt output at 30±10 seconds and proceed to the 20 cm point. Repeat the 10 cm procedure. The 30 to 90 cm flux levels are determined in the same manner. Following the 90 cm measurement, make a check reading at 40 cm. If this is within the limits set forth, the test chamber is in calibration, and the profile determination is completed. If not, carefully adjust fuel flow, allow 0.5 hour for equilibrium and repeat the procedure. Plot the radiant heat energy flux data as a function of distance along the specimen plane on rectangular coordinate graph paper. Carefully draw the best smooth curve through the data points. This curve will hereafter be referred to as the flux profile curve.

(4) Determine the open chamber apparent black body and chamber temperatures that are identified with the standard flux profile by opening the door and moving the specimen platform out. Allow 0.5 hour for the chamber to reach equilibrium. Read the radiation pyrometer output and record the apparent black body temperature. This is the temperature setting that can be used in subsequent test work in lieu of measuring the radiant flux at 20 cm, 40 cm, and 60 cm using the dummy specimen. The chamber temperature also shall be determined again after 0.5 hour and is an added check on operating conditions.

(f) *Conditioning.* Test specimens shall be conditioned to equilibrium at 21±3° C (69.8±5.4° F) and a relative humidity of 50±5 percent immediately prior to testing. A less than 1% change in net weight of the specimen in two consecutive weighings with two hours between each weighing constitutes equilibrium. The maximum cumulative time a conditioned sample may be exposed to conditions different from 21±3° C (69.8±5.4° F) and relative humidity of 50±5% before insertion in to the radiant panel chamber for testing is 10 minutes.

(g) *Test Procedure.* (1) With the sliding platform out of the chamber, ignite the radiant panel. Allow the unit to heat for 1 hour. It is recommended that a sheet of inorganic millboard be used to cover the opening when the hinged portion of the front panel is open and the specimen platform is moved out of the chamber. The millboard is used to prevent heating of the specimen and to protect the operator. Read the panel apparent black body temperature and the chamber temperature. When these temperatures are in agreement to within ±5° C (±9° F) with those determined previously, during the flux profile standardization procedure, the chamber is ready for use.

(2) Mount the specimen tray with insulation on the sliding platform and position with stud bolts (see Figure 9). Ignite the pilot burner, move the specimen into the chamber, and close the door. Start the timer. After 2 minutes ±5 seconds preheat, with the pilot burner on and set so that the flame is horizontal and about 5 cm above the specimen, bring the pilot burner flame into contact with the center of the specimen at the 0 mark. Leave the pilot burner flame in contact with the specimen for 2 minutes ±5 seconds, or until all flaming other than in the area of the pilot burner has ceased, then remove to a position of at least 5 cm above the specimen and leave burning until the test is terminated.

(3) If the specimen does not ignite within 2 minutes following pilot burner flame application, the test is terminated by extinguishing the pilot burner flame. For specimens that do ignite, the test is continued until the flame goes out. When the test is completed, the door is opened, and the specimen platform is pulled out.

(4) Measure the distance burned, (the point of farthest advance of the flame front) to the nearest 0.1 cm (.03 in). From the flux profile curve, convert the distance to W/cm² (Btu/ft² sec) critical radiant heat flux at flame out. Read to two significant figures. A suggested data log format is shown in Figure 10.

(5) Remove the specimen tray from the moveable platform. The succeeding test can begin as soon as the panel apparent black body temperature and chamber temperature are verified. The specimen tray should be at room temperature before the next specimen is inserted.

§ 1209.7 Test procedures for smoldering combustion.

This section provides the test method for determining smoldering combustion characteristics of materials used for thermal insulation. This test shall be conducted on materials at the measured settled density as provided in 1209.4.

(a) *Apparatus.* (1) The specimen holder shall be an open-top 20±0.2 cm (7.87±.08 in) square box, 10±0.2 cm (3.94±.08 in) in height, fabricated from a single piece of 0.61±0.08 mm thick (24 U.S. Standard gauge) stainless steel sheet with the vertical edges of the box overlapped, not to exeed 7 mm (.28 in) in seam width, and soldered so as to be watertight. A removable extension top extending 8±.5 cm. above the top of the smolder box shall also be provided. The specimen holder during test use shall rest upon a pad of unfaced glass fiberboard or equivalent having dimensions equal to or greater than those of the bottom of the specimen holder. The unfaced glass fiberboard shall be approximately 2.5 cm (1 in) thick with a thermal conductivity of 0.30±0.05 cal(g)/hr cm^2 °C/cm (0.24±0.04 Btu/hr ft^2 °F/in) at 23.9°C (75°F).

(2) Ignition source. The ignition source shall be a cigarette without filter tip made from natural tobacco, 85±2 mm (3.35±.08 in) long with a tobacco packing density of 0.270±0.020 g/cm^3 (16.9±1.25 lb/ft^3) and a total weight of 1.1±0.1 gm (0.039±0.004 oz).

(3) Balance. A balance of 1 kg (2.2 lb) capacity, accurate at least to 0.1 g (0.004 oz), is required.

(4) Test area. The test area shall be draft-protected and equipped with a suitable system for exhausting smoke and/or noxious gases produced by testing. Air velocities as measured by a hot wire anemometer in the vicinity of the surface of the specimen shall not exceed 0.5 m/sec (1.64 ft/sec). The test area shall be at 21±3°C (69.8±5.4°F) and 50±5 percent relative humidity at the time the test begins.

(b) *Test procedure.* (1) Specimens and cigarettes shall be conditioned in air at a temperature of 21±3°C (69.8±5.4°F) and a relative humidity of 50±5 percent to equilibrium prior to test. A change of less than 1% in net weight of the specimen in two consecutive weighings with two hours between each weighing constitutes equilibrium. Cigarettes shall be removed from any packaging and exposed in a suitable manner to permit free movement of air around them during conditioning. Calculate the weight of material necessary to fill the holder (volume 4,000 cm^3 or 0.14 ft^3) at the settled density as determined in § 1209.4(e). The material shall be blown, combed, or otherwise mixed to remove lumps and shall be loaded uniformly into each specimen holder, level and flush to the top of the holder. The weight of each specimen shall be measured to the nearest 0.2 g (0.007 oz) or less by weighing the holder before and after filling. If the weight of the specimen is less than that calculated, a removable extension top shall be placed on top of the holder, the necessary amount of insulation is placed inside the extension and the loaded holder shall be dropped from a height no greater than 7.6 cm. (3 in) onto a hard flat surface. This process shall be repeated until the calculated weight of material completely fills the holder. The extension top is then removed. With the specimen in the holder and placed on the insulated pad, a rod of 8 mm (.31 in) diameter with a pointed end shall be inserted vertically into the approximate center of the material being tested and withdrawn to form an appropriate cavity for the ignition source, such that the cigarette fits snugly and maintains uniform contact with the specimen. A well lit cigarette, burned not more than 8 mm (0.31 in), shall be inserted in the formed cavity, with the lit end upward and flush with the specimen surface. Burning of the cigarette and specimen shall be allowed to proceed undisturbed in the test area for at least 2 hours or until the smoldering is no longer progressing, whichever period is longer.

(2) After completion of burning and after the holder has cooled down to approximately room temperature, the specimen holder with its material residue shall be weighed, at least to the nearest 0.1 g (0.003 oz), and the percent weight loss of the original specimen calculated. The weight of the cigarette residue is ignored in this calculation. (That is, the weight of the cigarette residue is not subtracted from the net weight of the specimen holder's contends at the conclusion of the test.)

(3) Three specimens per sample shall be tested.

§ 1209.8 Procedure for calibration of radiation instrumentation.

This procedure is used to calibrate the radiation instruments used in the test procedures for measuring critical radiant flux.

(a) *Radition pyrometer.* Calibrate the radiation pyrometer by means of a conventional black body enclosure placed within a furnace and maintained at uniform temperatures of 490, 500, and 510°C (914, 932, and 950°F). The black body enclosure may consist of a closed chromel metal cylinder with a small sight hole in one end. Sight the radiation pyrometer upon the opposite end of the cylinder where a thermocouple indicates the black body temperature. Place the thermocouple within a drilled hole and in good thermal contact with the black body. When the black body enclosure has reached the appropriate temperature equilibrium, read the output of the radiation pyrometer. Repeat for each temperature.

(b) *Total heat flux meter.* The total flux meter shall be calibrated by the National Bureau of Standards, (direct request for such calibration services to the: Radiometric Physics Division, 534, National Bureau of Standards (NBS), Washington, DC 20234.), or, alternatively, its calibration shall be developed by transfer calibration methods with an NBS calibrated flux meter. This latter calibration shall make use of the radiant panel tester as the heat source. Measurements shall be made at each of the nine dummy specimen positions and the mean value of these results shall constitute the final calibration.

(c) *Recommendation.* It is recommended that each laboratory maintain a dedicated calibrated reference flux meter against which one or more working flux meters can be compared as needed. The working flux meters should be calibrated according to this procedure at least once per year.

§ 1209.9 Labeling requirement.

(a) Manufacturers, importers, and private labelers of cellulose insulation shall place on all containers of cellulose insulation the following statement:

"This product meets the amended CPSC standard for flame resistance and corrosiveness of cellulose insulation."

To meet this requirement manufacturers, importers, and private labelers may use any type of label, including one which is pressure sensitive or glued on, provided the label is made in such a manner that it will remain attached to the container for the expected time interval between the manufacture of the product and its installation.

(b) This label shall appear prominently and conspicuously on the container in letters which are at least one-fourth inch in height. The labeling statement shall be printed with legible type in a color which contrasts with the background on which the statement is printed.

§ 1209.10 Certification and enforcement.

(a) While this Part 1209 prescribes test methods to determine whether cellulose insulation subject to this interim standard meets its requirements, the

interim standard itself does not require that a manufacturer or private labeler test any cellulose insulation. However, section 14 of the Consumer Product Safety Act (15 U.S.C. 2063) requires manufacturers and private labelers of products subject to safety standards to certify that the product conforms to the standard based on either a test of each product or a reasonable testing program. (Elsewhere in this issue of the **Federal Register** the Commission has issued a certification rule that prescribes requirements that manufacturers and private labelers shall follow to certify that their cellulose insulation complies with the requirements of the amended standard.)

(b) The Commission intends to use the test procedures set forth in this Part 1209 to determine whether insulation subject to the interim standard meets the requirements of the interim standard.

§ 1209.11 Effective date.

All cellulose insulation that is a consumer product and that is manufactured after October 15, 1979 shall meet the requirements of this standard, including the labeling requirement of § 1209.9.

Dated: July 2, 1979.

Sadye E. Dunn,

Secretary.

BILLING CODE 6355-01-M

[FR Doc. 79-20768 Filed 7-5-79; 8:45 am]

BILLING CODE 6355-01-C

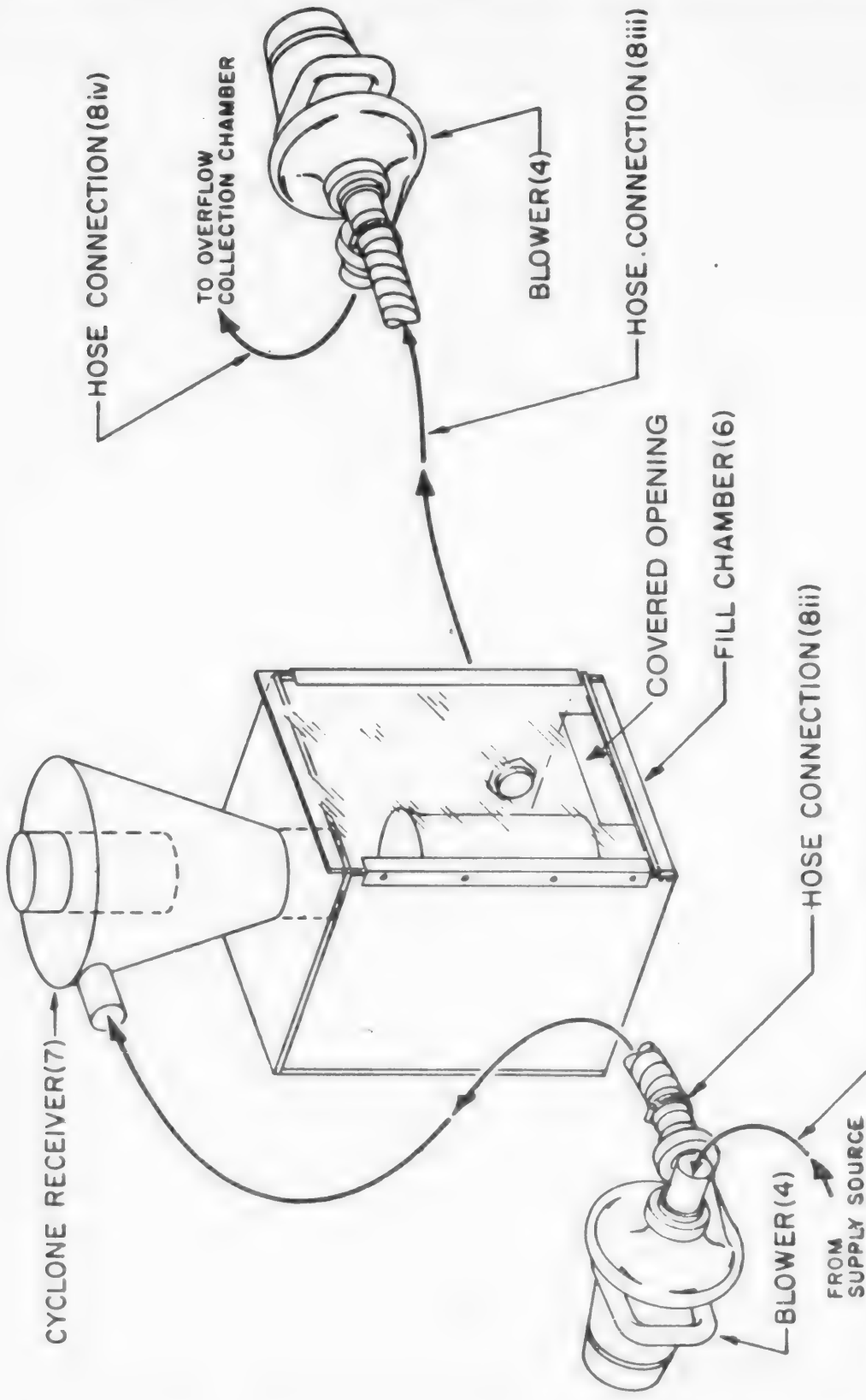


FIG 1—PARTIAL INSULATION PREPARATION APPARATUS

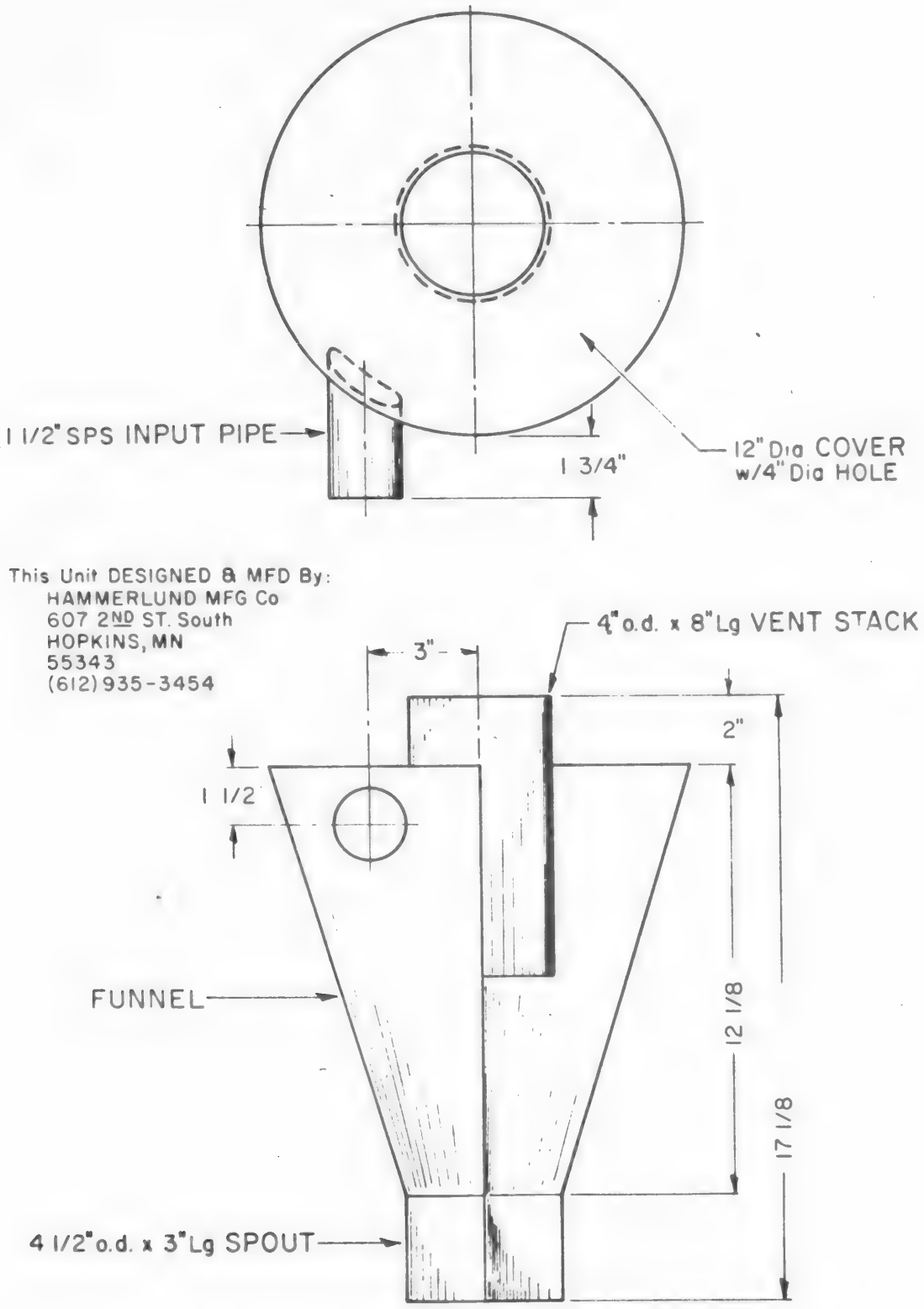


FIG 2—CYCLONE RECEIVER WELDMENT

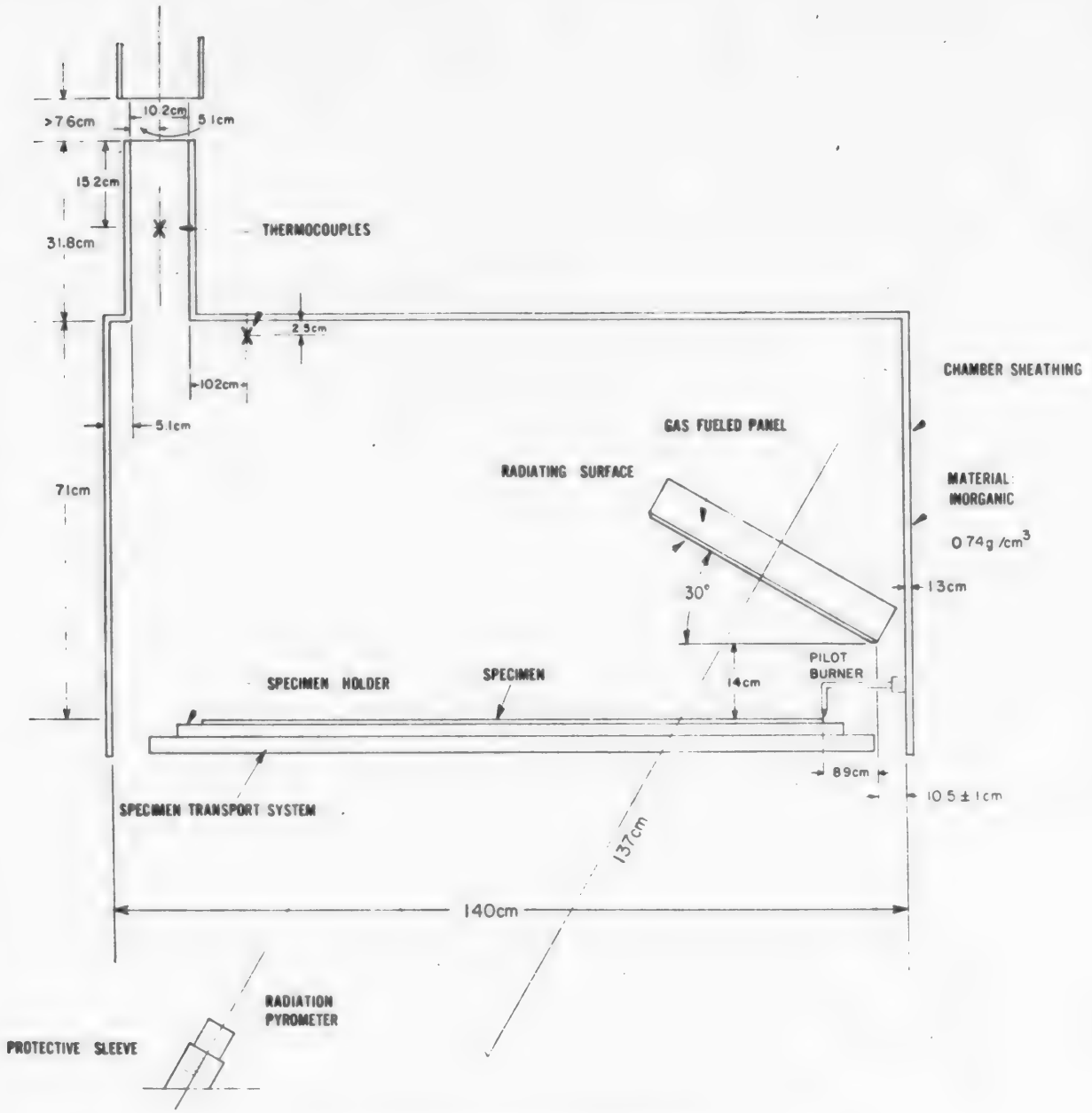


FIG 3 — FLOORING RADIANT TESTER SCHEMATIC

SIDE ELEVATION

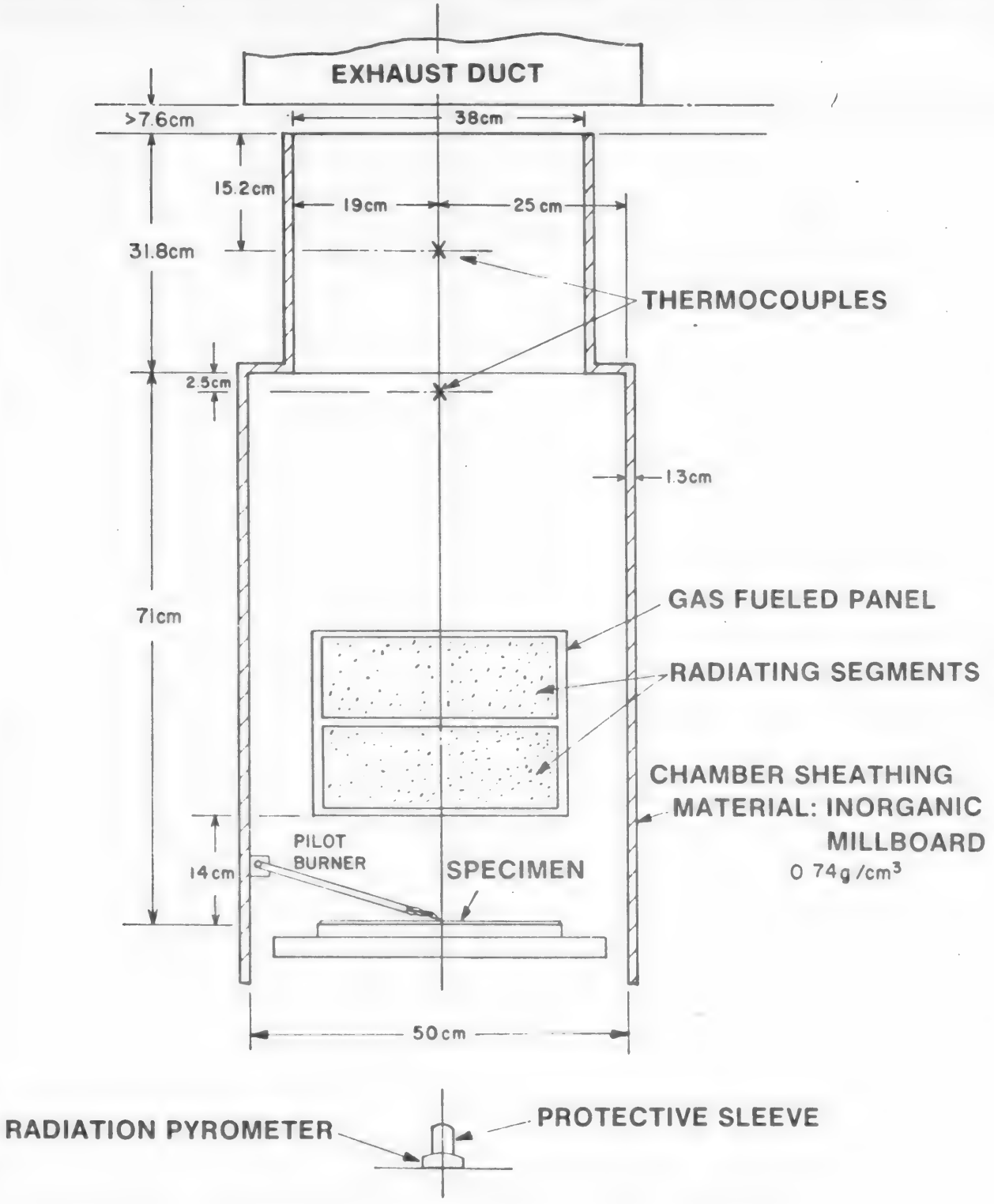


FIG 4 — **FLOORING RADIANT PANEL TESTER SCHEMATIC LOW FLUX END, ELEVATION**

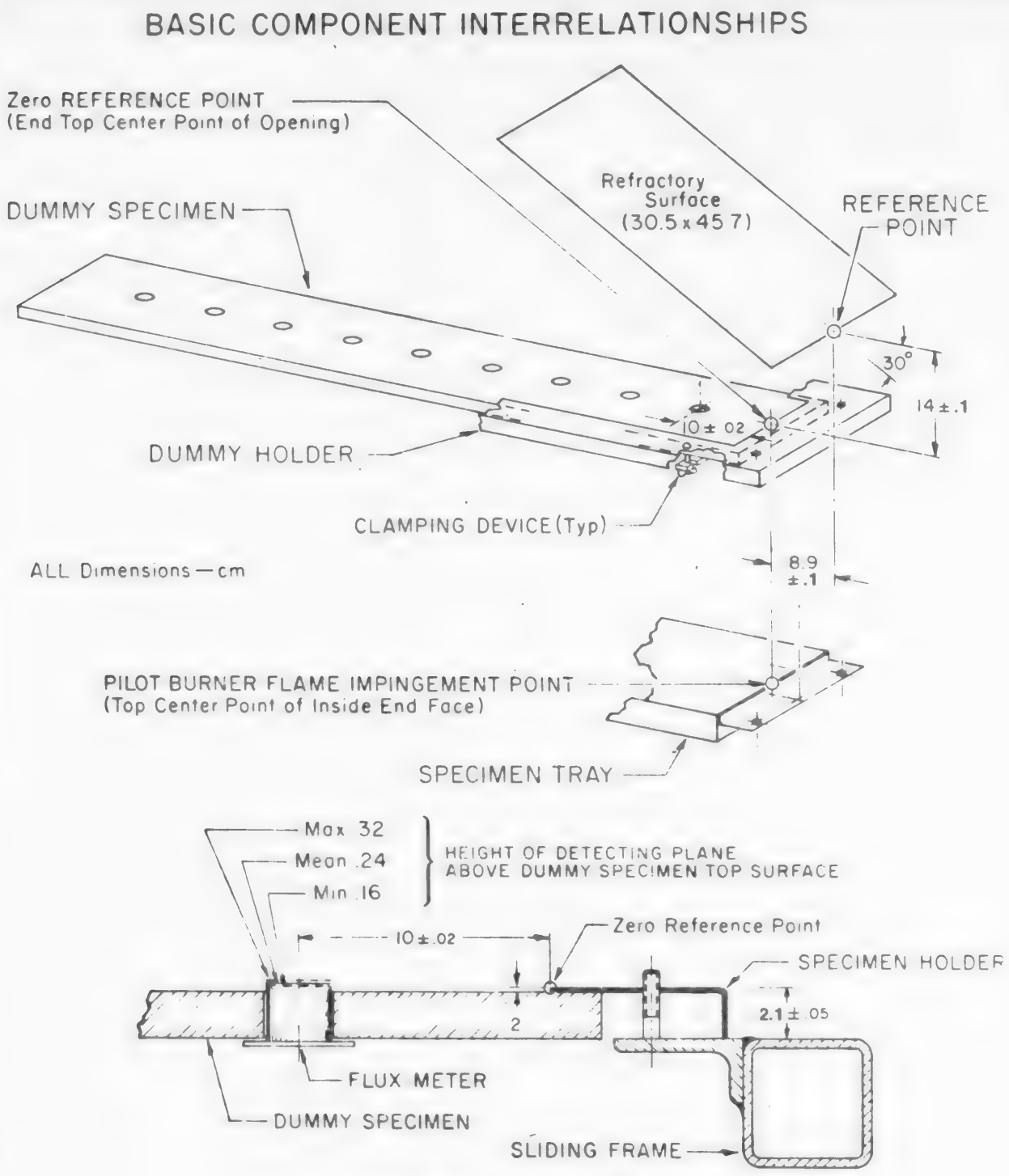


FIG 5 — ZERO REFERENCE POINT RELATED TO DETECTING PLANE

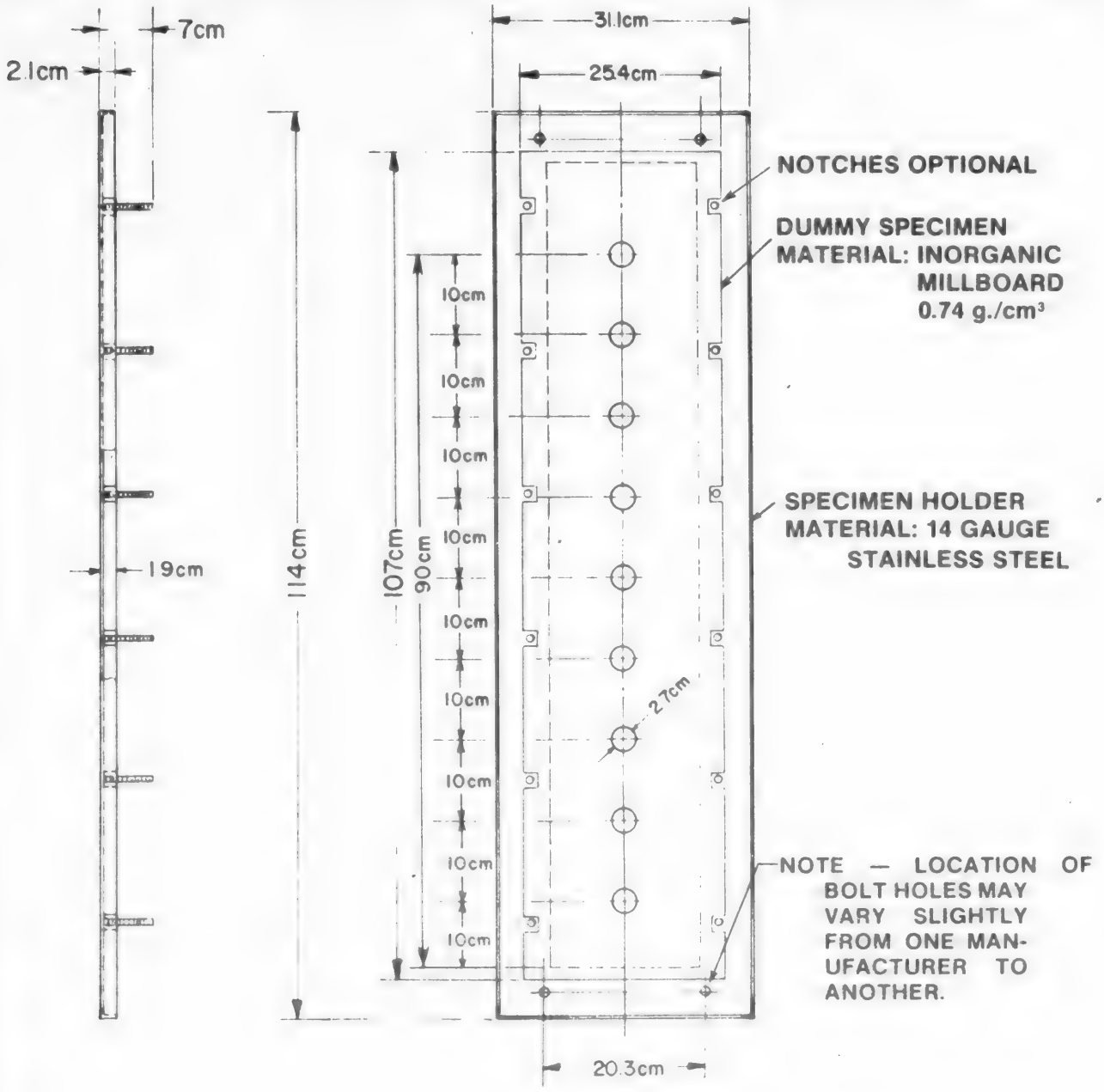
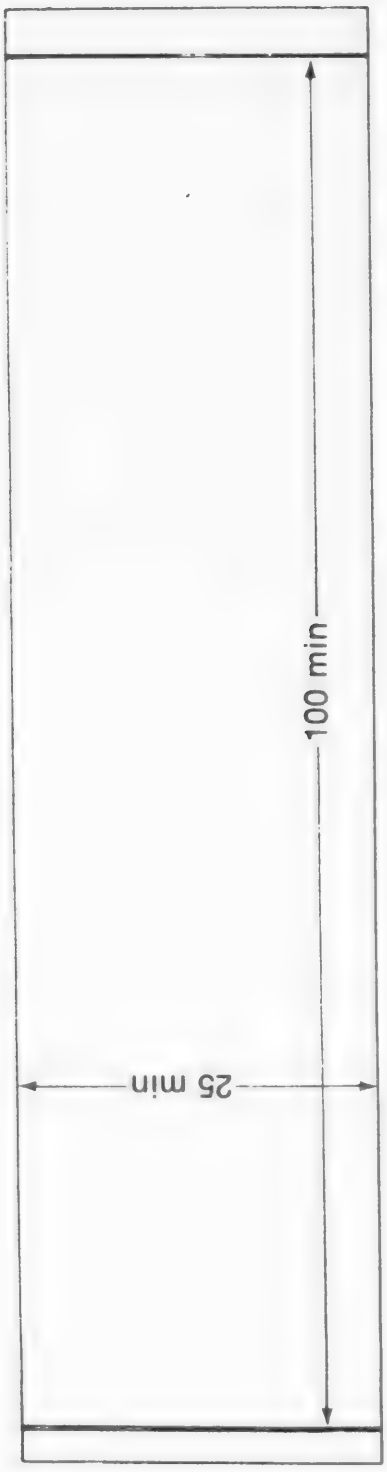
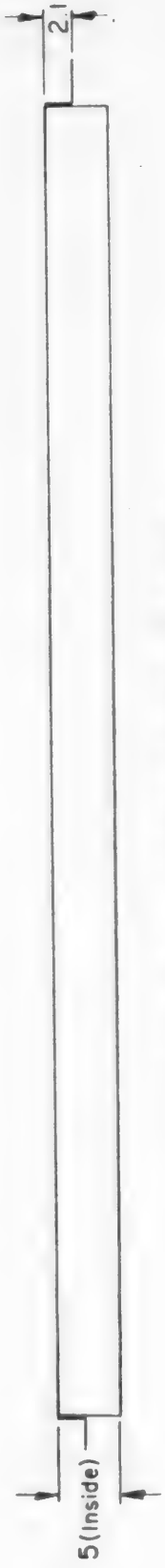


FIG 6 — **DUMMY SPECIMEN IN SPECIMEN HOLDER**





ALL DIMENSIONS—cm

FIG 7 — SPECIMEN TRAY

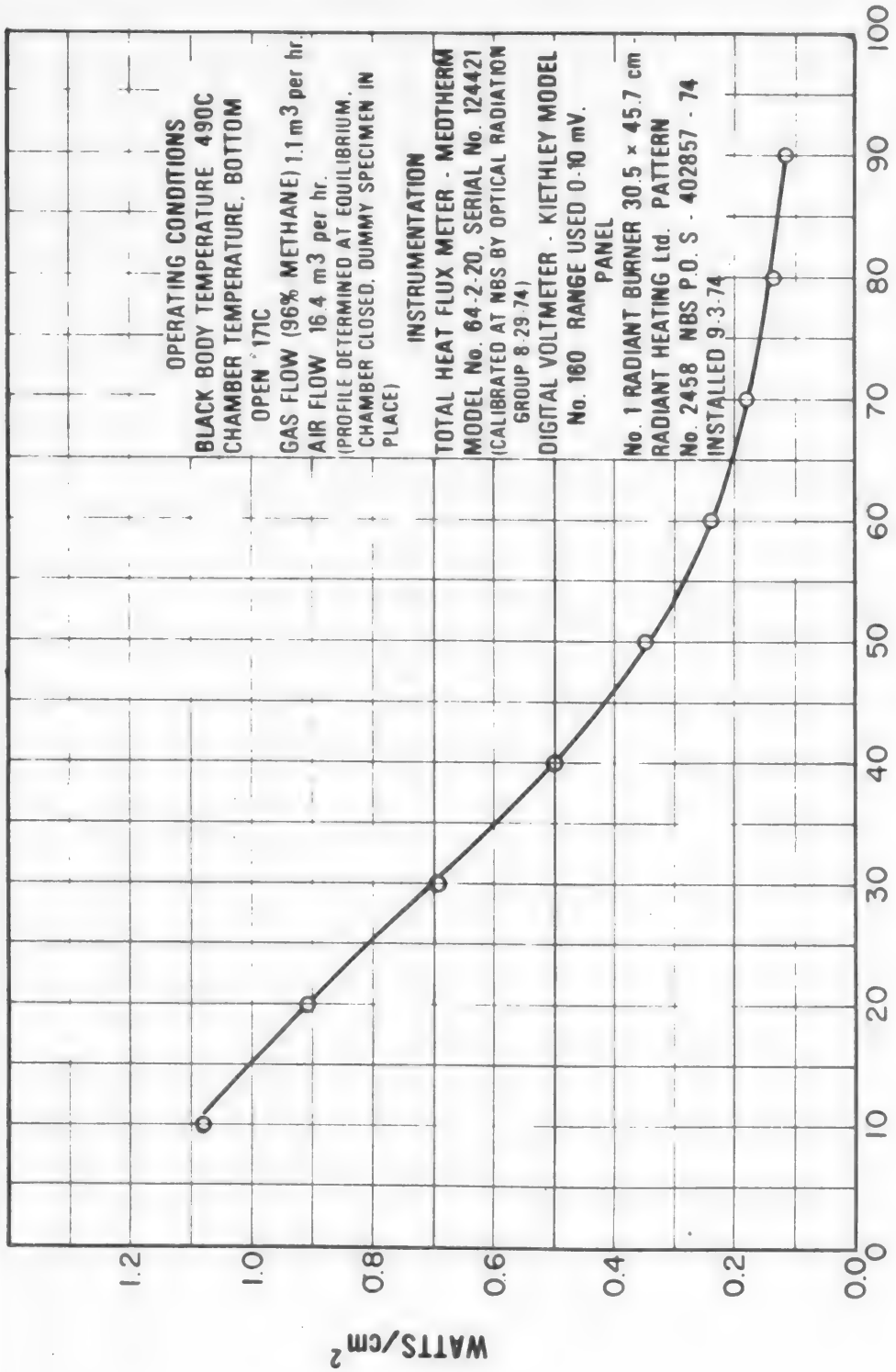


FIG 8 — STANDARD RADIANT HEAT ENERGY FLUX PROFILE

RADIANT FLUX [illegible]

Date _____

Black Body Temperature _____ m.v. _____ °C (°F)

Gas Flow _____ $NTPm^3H$ (SCFH) Air Flow _____ $NTPm^3H$ (SCFH)

Room Temperature _____ °C (°F)

Air Pressure _____ Gas _____ cm (in) of H_2O

Flux Meter _____ Conversion Factor _____

Radiometer No. _____ from Calibration on _____

Distance (cm)	MV	Watts/cm^2
10		
20		
[illegible]		
[illegible]		
[illegible]		
[illegible]		
[illegible]		
80		
[illegible]		

Signed _____

FIG. 9 Flux Profile Data Log Format

[illegible] Number _____ Date _____ Time _____

Laboratory _____

Specimen Identification/Code No. _____

Test Assembly: _____

Panel: Temperature _____ °C (°F)

Flow: Gas _____ $NTPm^3H$ (SCFH) Air _____ $NTPm^3H$

Pressure, cm (in) H_2O: Initial, Air _____ Gas _____

Chamber Temperature (Initial) _____ °C (°F)

Room: Temperature _____ °C (°F) Hood Draft _____ cm (in) water

Total Burn Length _____ cm (in)

Critical Radiant Flux watts/cm^2 _____

Flux Profile Reference _____

Observations: _____

Signed _____

FIG. 10 - Insulation Radiant Panel Test Data Log Format

16 CFR Part 1209

Interim Safety Standard for Cellulose Insulation

AGENCY: Consumer Product Safety Commission.

ACTION: Final rule.

SUMMARY: The Commission issues a final rule that manufacturers, private labelers, and importers must follow to certify that their products comply with the Commission's amended Interim Standard for Cellulose Insulation. The rule contains requirements for conducting a reasonable testing program, for recordkeeping, and for certifying compliance with the amended Interim Standard. The requirements will assist manufacturers, private labelers, and importers in complying with the amended Interim Standard and will also help the Commission monitor compliance with that standard.

EFFECTIVE DATE: The certification rule applies to cellulose insulation manufactured after October 15, 1979.

FOR FURTHER INFORMATION CONTACT: Allen Brauninger, Directorate for Compliance and Enforcement, Consumer Product Safety Commission, Washington, D.C. 20207, 301–492–6629.

SUPPLEMENTARY INFORMATION

Background

In the **Federal Register** of March 8, 1979 (44 FR 12872), the Commission proposed for public comment an amendment of the Interim Standard for Cellulose Insulation (16 CFR Part 1209). (The interim standard itself, which is intended to address the flame resistance and corrosiveness of cellulose insulation, was published on August 8, 1978 (43 FR 35240)). The amendment proposed on March 8, 1979 incorporates, with changes made by the Commission, the requirements for settled density, smoldering combustion, critical radiant flux, and corrosiveness contained in the purchasing specification for cellulose insulation of the General Services Administration issued on June 15, 1978 and designated GSA Specification HH–I–515D. This amendment will change the test procedures the Commission uses to determine if cellulose insulation distributed for sale to or use by consumers is acceptable for flame resistance and corrosiveness. Elsewhere in this issue of the **Federal Register** the Commission issues the amendment in final form.

In the March 8, 1979 **Federal Register** the Commission also proposed for public comment a regulation (16 CFR Part 1209, Subpart B, 44 FR 12864) setting forth the procedures manufacturers, private labelers, and importers of cellulose insulation must follow in certifying that their products comply with the proposed amendment. The proposed certification rule contains requirements for a reasonable testing program, recordkeeping, and labeling. The Commission is issuing the certification rule in final form in this document. The Commission is issuing the certification requirements at the same time as it issues a revised standard so that parties subject to the standard will have detailed guidance concerning how to comply with the standard.

Requirements of Consumer Product Safety Act

The Consumer Product Safety Act (CPSA) imposes two basic obligations on manufacturers, importers, and private labelers of cellulose insulation. The first is to produce and sell a product which will meet all requirements of the final amended standard when tested by the Commission. The manufacture for sale, offer for sale, distribution in commerce, or importation into the United States of any cellulose insulation which does not comply with the standard violates section 19(a)(1) of the CPSA. Section 22 of the CPSA authorizes the Commission to enjoin any person from violating section 19, and to seize any product which does not comply with an applicable standard. Additionally, sections 20 and 21 of the CPSA authorize the Commission to seek civil or criminal penalties for violation of the CPSA in appropriate cases.

The second basic obligation the CPSA imposes is that all manufactures, importers, and private labelers of cellulose insulation must certify that their products comply with the standard; they must base that certificate of compliance on a test of each product or reasonable testing program. Section 14(a) of the CPSA establishes the certification requirements. The failure to issue a certificate of compliance, or the issuance of a certificate which is false or misleading in any material respect violates section 19(a)(6) of the CPSA.

The regulation issued below prescribes the form and content of the certificate of compliance with the standard for cellulose insulation as well as general requirements concerning recordkeeping and a reasonable testing program to serve as the basis for issuing the certificate of compliance.

The Commission notes that the obligation to issue a certificate of compliance based on a reasonable testing program is in addition to, and not in place of, the obligation to manufacture, import, distribute, or private label only cellulose insulation which meets the requirements of the standard.

Consequently, if the Commission tests insulation in accordance with the standard and obtains failing results, the Commission may begin enforcement action for violation of section 19(a)(1) of the CPSA, even though the manufacturer, importer or private labeler of that product may have issued a certificate of compliance and may have based that certificate on a reasonable testing program which meets the requirements of the regulation issued below. Additionally, failing results from any test of insulation the Commission conducts in accordance with the provisions of the standard, will constitute some evidence that the certificate of compliance was false or misleading.

The Proposed Certification Rule

The Commission proposed the certification requirements for cellulose insulation pursuant to section 14 of the Consumer Product Safety Act (CPSA) (15 U.S.C. 2063). Subsection (b) of that section gives the Commission the authority to issue regulations to prescribe a reasonable testing program which must be used to support certification of compliance with any consumer product safety standard. (Section 14(a) requires each manufacturer, importer, or private labeler of a product which is subject to a consumer product safety standard to issue a certificate of compliance with the applicable standard and to base that certificate upon a test of each item or upon a reasonable testing program.)

The proposed certification rule requires manufacturers, private labelers, and importers to: (1) implement their own reasonable testing programs within certain broad outlines, (2) issue certificates of compliance for cellulose insulation in the form of labels or separate certificates which state that the insulation complies with the standard and supply other specified information, and (3) keep records which demonstrate that the certificates are based on a reasonable testing program.

Since it is not practical to test each batch of insulation subject to the standard, the proposed certification rule requires the use of a reasonable testing program to support certification of compliance. The proposed testing

program permits manufacturers, private labelers, and importers to determine the types and frequency of testing for their own programs. The Commission decided not to specify these elements because, as is stated in the proposal, a uniform, mandatory program would not be suitable for all cellulose insulation manufacturers. The Commission pointed out that manufacturers' operations differ in size, profitability, and quality control procedures.

However, the proposed rule (and the final rule issued below) does require that all reasonable testing programs conform to certain broad outlines. The Commission explained in the preamble to the proposed rule that this is because current cellulose insulation production, even with the best state-of-the-art in manufacturing, is sufficiently variable to warrant periodic testing to demonstrate that the product complies with the amended standard.

Therefore, proposed § 1209.33(b) requires all reasonable testing programs to consist of four parts:

1. Qualification tests which must be performed on samples of the manufacturer's cellulose insulation to demonstrate that the product is capable of passing the tests prescribed by the amended standard.

2. A written description of the raw materials, production equipment, and manufacturing process used to produce the cellulose insulation which passed the qualification testing. This description is known as the "product specification."

3. Production tests performed at appropriate intervals on the insulation as it is manufactured to demonstrate that the product being manufactured is substantially similar to the product which passed the qualification tests and to demonstrate that the product being manufactured meets the requirements of the amended standard.

4. Corrective action, which must be taken whenever samples of the cellulose insulation yield unacceptable or failing test results.

Each of these four elements of the reasonable testing program is discussed in detail in the Commission's proposal document.

Proposed § 1209.38 requires manufacturers, private labelers, and importers subject to the standard to maintain written records which are required to be made available to any designated officer or employee of the Commission upon request. The required records include a record of each product specification (which includes a description of results from qualification tests) records concerning the types and frequency of production tests conducted, records of all corrective actions, and records indicating which insulation material is covered by each certificate of compliance issued. In the proposal the Commission noted that the primary purpose of these records is to enable manufacturers, private labelers, and importers to demonstrate that they are conducting a reasonable testing program in certifying their products.

The final sections of the proposed certification rule describe the form of the certificate of compliance for cellulose insulation. Manufacturers of insulation subject to the standard which is sold in bags or containers are required to certify compliance with a label on each bag or container. (Section 14(c) of the CPSA authorizes the Commission to issue rules requiring a product to bear a label containing certain information.) The certification label is required to include specified information which is discussed below in the analysis of comments as well as in the March 8, 1979 preamble. In those few instances where cellulose insulation is not sold in containers, the proposed rule states that the certificate of compliance must, of necessity be in the form of a document which is separate from the product. The proposed rule also provides that where a private labeler distributes a product subject to the standard under the private labeler's name or where an importer distributes such a product, the private labeler or importer must issue the certificate of compliance as well as assume responsibility for the integrity of the manufacturer's records and for ensuring that all testing used to support the certificate (even though performed by the manufacturer) has been properly conducted with acceptable results. In the case of an importer, the importer may rely on the foreign manufacturer's certification testing only if the records of the tests are maintained in the United States and the importer is a resident or maintains a resident agent in this country.

The Commission decided that certification for cellulose insulation, where feasible, should be in the form of a label rather than a separate certificate for the reasons which are stated in the preamble of the proposed rule. Primarily, the Commission noted that unlike separate certificates, a label would be visible to all in the distribution chain, including consumers. If any questions arose concerning whether particular bags of insulation complied with the amended standard, the certification would not have to be retrieved but would be immediately available.

The Commission reviewed the economic impact of the proposed rule in the proposal and stated that the costs of the rule would not be burdensome. The Commission noted that while the rule mandates a specified label for cellulose insulation, the label is the same as the one required by the amendment. In addition, the rule leaves manufacturers with a great deal of flexibility as to testing and recordkeeping, thus allowing them substantial control over their own costs. In light of the need for the rule, the Commission concluded that the proposed requirements were reasonable.

Comments on the Proposal

The Commission received twenty-five comments on issues relating to the proposed certification rule. Commenters included cellulose insulation manufacturers, testing laboratories, associations of testing laboratories, chemical manufacturers, a federal agency, an association of cellulose insulation manufacturers, and an association of building officials. The principal issues raised by the comments and the Commission's responses are discussed below.

1. *Applicability of the Certification Rule.* Proposed § 1209.31(b)(1) states that cellulose insulation subject to the standard (and the certification rule) includes all insulation produced or distributed for sale to, or for the personal use, consumption, or enjoyment of consumers in or around a permanent or temporary household or residence, a school, in recreation or otherwise.

One commentor noted that it is unclear whether the proposed rule is intended to apply to the application of cellulose insulation in commercial, industrial and agricultural buildings. The commenter stated that the rule should not include these applications and should be limited to insulation applied to residential structures. The same commenter noted that it is also unclear whether the rule applies to "spray-on" cellulose material which contains an adhesive. The commenter suggested that to the extent "spray-on" cellulose insulation is to be applied to residential structures, it should be covered by the standard and certification rule.

In response to this comment, the Commission points out that the standard and certification rule do not apply to the application of insulation, but only to the insulation itself. The standard and certification rule include that cellulose insulation which meets the definition of "consumer product" in section 3 of the CPSA (15 U.S.C. 2051).

The Commission has decided not to limit the applicability of the standard and certification rule to cellulose insulation which is intended only for residential use. The Commission points out that Congress intended that the safety standard and certification rule cover all cellulose insulation manufactured for use as a consumer product. (See the Emergency Interim Consumer Product Safety Standard Act of 1978, Pub. L. 95–319, 92 Stat. 386, July 11, 1978.)

Therefore, the cellulose insulation which is covered by this rule is that insulation which is produced or distributed for the personal use, consumption, or enjoyment of consumers in or around a permanent or temporary household or residence, a school, in recreation, or otherwise. As a practical matter, the Commission notes that chemical formulations for cellulose insulation vary depending on the kind of roof on a building, not on how a building is used. Therefore, while there are difference formulations for cellulose insulation, the insulation material used in a building does not depend on whether the building is a residence. The Commission believes it would not be pratical to limit the standard and certification rule to residential applications since the same type of insulation has both residential and non-residential uses.

The Commission notes that "spray-on" cellulose insulation, which is installed using a spray-on process with wet or dry adhesive, is included within the definition of cellulose insulation in the amendment to the interim standard. Therefore, such cellulose insulation is also covered by this final certification rule.

It should also be noted that the final amendment includes cellulose insulation installed using the "wet process" method of installation, as did the proposal. (The "wet process" insulation is blown into an area with a spray or mist of water applied at the nozzle during installation.) Thus, this final certification rule covers such insulation also.

2. *Reasonable Testing Program.* (a) *Testing to support certification.* Three commenters indicated their support for the design of the proposed testing program. One commenter commended CPSC for recognizing the nature of the cellulose insulation manufacturing process and the product characteristics and for consequently, allowing manufacturers to develop and maintain their own testing programs to meet their responsibilities and needs.

Several commenters, however, urged the Commission to revise the proposed regulation to require insulation manufacturers to participate in third-party certification programs. One commenter noted that those manufacturers who do use an independent testing laboratory for certifying, testing, and follow-up would be at a significant cost disadvantage over manufacturers who do their own testing. Another commenter noted that under the proposal, manufacturers are free to select a test procedure they are capable of passing. Several commenters suggested that mandatory third-party testing is essential to protect consumers from nonconforming and unsafe insulation on the theory that testing and certification by manufacturers themselves presents a greater potential for abuse than outside testing and certification. One commenter suggested that CPSC should have issued, instead of a proposal allowing manufacturers to design and implement their own testing programs within certain parameters, an effective set of guidelines for use by private organizations carrying out testing programs on cellulose insulation. The commenter noted that such an effective set of guidelines at a minimum should include random, unannounced testing and examination of insulation at a frequency based on the amount of material produced, periodic independent follow-up testing, and a meaningful procedure in case of failure with controls on compliance statements and related markings.

The Commission declines to revise the proposed certification rule to provide for mandatory third-party testing by commercial laboratories. The Commission does not possess information to demonstrate that insulation which is certified by a third party is more likely to comply with the amended standard than insulation which is certified by the manufacturer on the basis of in-house testing. During the process of enforcing the existing standard, the Commission sampled and tested insulation manufactured by more than 200 firms. Several of these firms participated in third-party certification programs, many others based their certification of compliance entirely on in-house testing. Preliminary examination of the test results obtained by the Commission does not clearly establish that insulation manufactured by firms participating in commercial certification programs is more likely to comply with the standard than insulation manufactured by firms which do their own testing. Therefore, the Commission concludes that mandatory third-party testing is not essential for consumer safety.

In addition, as noted in the preamble to the proposed rule, the Commission believes that mandatory third-party testing could be unfair to those firms, large or small, who might be able to perform reasonable testing at a lower cost than the fees imposed by an outside testing laboratory.

The preamble of the proposed rule also stated that the Commission decided against the proposal of a requirement for third-party certification in part because such a requirement might necessitate issuance by the Commission of regulations determining exactly what type of firms and organizations would be eligible to perform the required sampling and testing.

One commenter noted that the Commission would not have to issue such regulations because the Commission could require testing to be performed by laboratories which have been qualified to perform the testing in the amended standard by the national Voluntary Laboratory Accreditation Program (NVLAP), administered by the Departmenf of Commerce.

The Commission is aware that NVLAP has announced that once the Commission issues its amendment on a final basis, CPSC may request that NVLAP establish approval criteria for laboratories qualified to conduct the testing in the Commission's standard. (NVLAP currently only has criteria for qualification of laboratories to perform the tests in GSA Specification HH–I–515D.) However, despite the possibility that NVLAP may in the future list laboratories qualified to conduct the tests in the amended standard, the Commission continues to believe that mandatory third party testing is not necessary. Commission experience has shown that insulation tested and certified by manufacturers themselves is just as likely to comply as that tested and certified by third parties.

While the final rule does not provide for mandatory third party testing, it does state at § 1209.33(d) that any or all of the testing for a reasonable testing program may, at the manufacturer's discretion, be performed by a commercial testing laboratory. The Commission is aware that some manufacturers might find it helpful to have information on what laboratories are qualified to perform the tests in the amended standard. The Commission intends, therefore, to carefully consider whether to request that NVLAP establish approval criteria for laboratories qualified to conduct this testing.

One commenter objected, because of their vagueness, to the use of words like "appropriate", "reasonable," "periodically," and so forth in the description of the proposed reasonable testing program. The commenter suggested that production testing frequency should be based on production tonnage and that one test for flame resistance should be required for every 10 tons produced or every three hours of production time, whichever occurs first. The commenter also stated that one corrosion test should be required on representative samples from each day's production.

The Commission stated in the proposal that it was not specifying the types or frequency of testing for certification because uniform testing requirements would not be suitable for all cellulose insulation manufacturers whose operations differ in size, profitability, and quality control procedures. The Commission continues to believe that manufacturers should be permitted to determine, based on their own needs and manufacturing processes, the types and frequency of certification testing. The use of words like "appropriate" or "reasonable" in the description of the required testing program is necessary to provide flexibility for manufacturers while at the same time to indicate that testing programs which, for example, use tests which do not even simulate the tests in the standard may violate the testing program requirements. Because the Commission believes that the commenter's suggested testing frequency may not be suitable for all manufacturers, the Commission has not modified the proposed testing program in this regard in the final rule.

One comment from a manufacturer of cellulose insulation objected that the proposed regulation would allow manufacturers to devise testing programs which they believe will consistently pass their products, rather than testing programs which are capable of assuring that their product will consistently meet the requirements of the standard.

The Commission observes that proposed § 1209.33(b) defined a "reasonable testing program" as one which "demonstrates that the insulation complies with the standard." While the proposal did not require manufacturers and other parties subject to its provisions to use specified tests in devising reasonable testing programs, the proposal did state that any tests used must be "reasonable tests."

In response to this comment, the Commission has decided to clarify § 1209.33(b) of the regulation issued below by adding language to state that a reasonable testing program cannot consist of tests which the party responsible for issuing the certificate of compliance either knows, or should know through the exercise of reasonable dilligence, will pass or accept insulation which will yield failing results when tested in accordance with the standard. The language of § 1209.33(b) has also been revised to state that a reasonable testing program is one which demonstrates with "reasonable certainty" that insulation certified to comply with the standard will meet all requirements of the standard. It should also be noted that the language in proposed § 1209.33(c) which allows the use of tests other than those prescribed by the standard in a reasonable testing program has been moved to § 1209.33(b) of the regulation issued below. The Commission believes that this modification will improve the organization of the certification regulation.

(b) *Product specification.* Proposed § 1209.35(a) requires that before any manufacturer, private labeler, or importer distributes in commerce cellulose insulation subject to the standard, it shall ensure that the insulation is described in a written product specification. Proposed § 1209.38 requires that a record of each product specification be maintained so that it may be made available to any designated officer or employee of the Commission upon request.

Proposed § 1209.35(b) lists the information that each product specification must contain. The product specification is required, among other things, to include "the formulation of the fire-retardant chemicals added, including their chemical constituents and their form (for example, granulated or powdered) * * *" (§ 1209.35(b)(3).)

Two commenters stated that some manufacturers use premixed chemicals which are supplied in a liquid form. The commenters suggested that the language of § 1209.35(b)(3) be revised to reflect this fact. The Commission agrees with this suggestion. The Commission has, therefore, revised § 1209.35(b)(3) in the final version of the rule so that it now reads "* * * including their chemical constituents and their form (for example, granulated, powdered, or liquid) * * *"

Two other commenters objected to the content of proposed § 1209.35(b)(3) because it would require a manufacturer using a pre-mixed fire retardant to disclose the chemical formula of the pre-mix, when this formula is generally a trade secret known only to the manufacturer of the product. For this reason, these commenters urged revision of proposed § 1209.35(b)(3) to allow insulation manufacturers using a pre-mixed fire-retardant to describe the fire-retardant simply by the name of the supplier and the brand or trade name of the product.

The Commission agrees with the point raised by these commenters. Therefore, the Commission has added a sentence to § 1209.35(b)(3) below, which provides that in those instances where the chemical composition or formula of a pre-mixed fire-retardant is not known to the insulation manufacturer, the manufacturer may describe the pre-mixed fire-retardant by the name and address of the supplier and its brand or trade name.

In addition to the formulation of fire-retardant chemicals added, the proposed rule requires the product specification to include a description of the equipment used to manufacture the insulation (proposed § 1209.35(b)(1)) and a description of the cellulosic stock material used (proposed § 1209.35(b)(2)). Several commenters stated that much of the information required to be included in the product specification is proprietary and should not be required to be disclosed. Certain of these commenters appeared to be willing to have their product specifications examined onsite by Commission inspectors, but did not want to sent copies to CPSC.

The Commission is aware that trade secrets and other confidential information it possesses may not be disclosed to the public, as provided in section 6(a)(2) of the CPSA (15 U.S.C. 2055(a)(2)). The Commission has, in fact, issued regulations under the Freedom of Information Act (15 U.S.C. 552) (16 CFR Part 1015, February 22, 1977) which establish procedures by which a firm may assert that information the Commission requires it to furnish is exempt from disclosure. As the regulations state, Commission procedure is that material sent to the Commission for which confidential handling is requested is marked "restricted" and is not placed in a public file. If the Commission then receives a specific request for disclosure of the material, the Commission decides, based on the most authoritative judicial interpretations available at the time, whether the material is entitled to be withheld under the Freedom of Information Act. The firm submitting the material is notified of the Commission's final decision which is appealable in the courts.

In response to the concerns of these commenters, the Commission has added a new subsection (c) to § 1209.38 on "Records" dealing with confidentiality of records, including confidentiality of product specification records. The new subsection references section 6(a)(2) of the CPSA, the Freedom of Information Act, and the Commission's regulations under that act and explains that requests for confidentiality of records will be handled in accordance with the Commission's regulations.

It should also be noted that, as a general rule, manufacturers' records will be examined by Commission inspectors at the manufacturing facility; and manufacturers will not usually be asked to send their records to CPSC.

One commenter noted that the information required to be listed in the product specification is not the information most likely to detect differences in the ability of the insulation to meet the requirements of the standard. The commenter stated that the factors which would be relevant (i.e., screen size, hammer clearance, length and configuration of ductwork, and so forth) would probably not be meaningful to a Commission inspector who is a generalist rather than a specialist in the field of cellulose insulation. For this reason, the commenter recommended elimination of the requirements of the proposed rule relating to the product specification so that the requirements of the rule would be addressed exclusively to testing insulation for compliance with the standard.

The Commission declines to eliminate or to change in the manner suggested the requirements in the rule relating to the product specification. While the Commission recognizes that the factors listed by the commenter may be relevant to the ability of insulation to meet the standard, the Commission does not have technical information indicating how these factors might affect the end product. The Commission believes, however, that a description of the equipment used to manufacture the insulation, a description of the cellulosic stock material used, the formulation of fire-retardant chemicals added, and a description of the types and results of qualification tests will be useful as an identification of the elements used in producing a particular product. This kind of information will assist Commission staff in monitoring compliance with the standard as well as the testing requirements in the certification rule. The information will enable Commission staff to determine whether a manufacturer is producing a product according to the product specification. Further, if a manufacturer has been producing a complying product for a period of time and then begins to produce a noncomplying product, the product specification may enable Commission staff to identify what element of the manufacturing process (i.e., the cellulosic stock material, the equipment, and so forth) may be contributing to the noncompliance. The Commission points out that manufacturers, of course, are free to include in the product specification any additional information they believe is appropriate.

(c) *Corrective action.* The final element of the proposed reasonable testing program consists of corrective action which must be taken whenever samples of the cellulose insulation yield failing test results. Proposed § 1209.37(a) provides that when any production test yields failing results, corrective action must be taken. Corrective action includes changes to the manufacturing process as well as reworking the insulation product itself and may consist of equipment adjustment or repair, change in chemical formulation, chemical quantity, or cellulosic stock, or any other action deemed appropriate to achieve passing test results. Proposed § 1209.35(d) provides that whenever a manufacturer, private labeler, or importer makes a change to the equipment, the cellulosic stock material, or the chemical formulation or any other factor which is likely to affect the ability of the insulation to meet the standard, that change results in a new product, requiring the preparation of a new product specification. The new product must be subjected to qualification tests and must yield passing results.

Two commenters objected to these provisions, stating that the proposed rule locks manufacturers into their existing equipment because when a manufacturer changes his equipment, he must requalify his product. The commenters stated that manufacturers will be reluctant to upgrade their equipment and manufacturing process.

The Commission believes that these commenters have misunderstood the intent of proposed §§ 1209.37(a) and 1209.35td). Proposed § 1209.35(d) states that only those changes to the equipment or the product formulation which are likely to affect the ability of the insulation to meet the standard such as changes in chemical formulation, equipment design, or cellulosic stock material used result in a new product triggering requalification. Equipment modifications which do not relate to the ability of insulation to comply with the standard such as replacing worn screens or blown-out motors require no retesting of the end product. Therefore, the Commission does not believe that the proposed rule inhibits manufacturing improvements and has not changed the rule in response to these comments.

3. *Recordkeeping Requirements.* Proposed § 1209.38 requires manufacturers, importers, and private labelers of cellulose insulation subject to the standard to maintain specified records which are required to be made available to any designated officer or employee of the Commission upon request. The required records include a record of each product specification (which includes a description of and results from qualification tests), records demonstrating compliance with the production testing requirements, records of all corrective actions taken, and records indicating which insulation material is covered by each certificate of compliance issued.

In addition to the comments discussed above concerning confidentiality of records, two commenters addressed these recordkeeping provisions. One commenter expressed support for the provisions, noting that the information required to be maintained could be incorporated into manufacturers' existing recordkeeping systems with a minimum burden. The other commenter stated that required records should include statements concerning the disposition of material that does not comply.

The Commission does not believe it is necessary for the records to state the disposition of noncomplying insulation. Cellulose insulation that does not comply with the standard cannot be sold or offered for sale as cellulose insulation. Manufacturers should determine, based on their own needs, whether to recycle noncomplying insulation until an acceptable product is achieved, to sell the noncomplying material for a use other than cellulose insulation, or to simply dispose of the noncomplying material.

4. *Certificate of Compliance.* a. *Form of certificate.* Proposed § 1209.39(a)(1) requires that the certificate of compliance for cellulose insulation which is sold in bags or other containers must be in the form of a label on each container. (This label may be the same label that is required by the amended interim standard.) Proposed § 1209.39(a)(2) requires that the certificate of compliance for insulation which is not sold in containers must be in the form of a separate certificate.

One firm suggested that instead of a label on the packaging of insulation, a product identification be required for

certification purposes. The firm explained that it uses "microtaggants" (coded particles which can be retrieved from the product and de-coded with a microscope and magnet) to identify its insulation.

The Commission points out that one of the purposes of the certification label is to enable consumers to identify complying insulation. "Microtaggants" obviously would not serve this function. In addition, the Commission believes that the form of the certificate of compliance should be uniform among manufacturers. Many smaller insulation manufacturers may not be able to afford to use such coded particles and may prefer to label their containers. For these reasons, the Commission has not changed the proposed rule to require or to allow the use of coded particles for certification purposes.

Another commenter noted that proposed § 1209.39(a)(1) states that the information required by the label "shall be permanent and conspicuous on the bag or container * * *" while the preamble of the proposed amended standard states that manufacturers may use any type of label, including a glued-on label. The commenter suggested that these statements appear to be in conflict.

The Commission acknowledges that since "permanent" was not defined in the proposed certification rule, some confusion may have resulted. The "permanent" language in proposed § 1209.39(a)(1) means that the certification label must be permanent until the bag or container is opened and used. A glued-on label would satisfy this sense of "permanency." The final version of the rule below includes an explanation of "permanent."

In the preamble to the proposed rule, the Commission specifically solicited comments on whether distributors and retailers might prefer to be provided with a separate certificate for insulation they receive in addition to the certification label. The Commission noted that distributors and retailers could retain a separate certificate after they have sold the certified products and could produce the certificate as a defense in any enforcement action for violation of the standard.

The Commission received three comments on this issue. One manufacturer stated that distributors and installers should be furnished with a separate certificate for their own protection, while another manufacturer opposed such a requirement. The latter commenter stated that after issuing separate certificates to its retailer-customers, the commenter asked the recipients whether they remembered receiving the certificates and if so, what was done with the certificates. According to the commenter, 73% of the retailers said they did not remember receiving a certificate; only 12% of the retailers stated that they had retained the certificates. A comment from the Federal Trade Commission suggested that the Commission should require cellulose insulation manufacturers who supply private labelers and importers to issue a separate certificate in addition to labeling the containers of insulation.

The Commission has decided not to modify the proposed rule to add any requirement that a manufacturer supply separate certificates to parties in the chain of distribution, in addition to placing the certificate on each container of insulation. The Commission emphasizes that those distributors and retailers who want a separate certificate can contractually obtain an appropriate document from the person who provides them with the insulation. Similarly, private labelers and importers who desire specific written assurance from the manufacturer that the product supplied meets the standard can require such assurance as one of the conditions of sale in any contract between the supplier and the private labeler or importer. (It should be noted that the proposed rule and final rule, below, affirmatively require the private labeler or importer to issue the certificate of compliance where the private labeler or importer is the party closest to the consumer in the chain of distribution.)

b. *Contents of certificate.* Proposed § 1209.39(a)(1) requires the certification label to contain the following statement. "This product meets the amended CPSC standard (effective October 16, 1979) for the flame resistance and corrosiveness of cellulose insulation." The label is also required to include the name of the manufacturer, private labeler, or importer issuing the certificate, the date of manufacture by day, month, and year, and the place of manufacture. In those instances where cellulose insulation is not sold in bags or other containers, the separate certificate is required to contain the same information as must appear on the certification label. (proposed § 1209.39(a)(2)).

One commenter questioned the necessity for the proposed labeling statement because the date of manufacture is also required to appear on the container and all insulation manufactured after the effective date of the amended standard must comply with its provisions. This commenter urged the Commission to eliminate the proposed labeling statement as superfluous. The commenter expressed concern that in enabling consumers to distinguish insulation which complies with the amended standard from insulation which complies with the original standard, the labeling statement will result in consumers only purchasing the newer product. The commenter concluded that inventories of insulation manufactured before the effective date of the amended standard will be difficult to sell.

The Commission points out that one of the primary purposes of the labeling statement is to enable consumers to identify insulation which complies with the amended standard. The Commission believes that consumers should be able to make an informed choice as to the kind of cellulose insulation they purchase. For this reason, the Commission has not eliminated the labeling statement in the final rule.

Another commenter urged the Commission to remove the phrase "effective October 16, 1979" from the labeling statement. The commenter noted that inclusion of the effective date of the amended standard might cause some consumers to believe that the insulation was manufactured on that date.

The Commission does not believe that the inclusion of the effective date of the amended standard on the label is necessary to identify insulation which is subject to the amended standard. In the interest of shortening the labeling statement without lessening its utility, the Commission has, therefore, decided to eliminate the requirement of including the effective date of the amended standard on the certification label and the separate certificate. The Commission notes, however, that if that standard is ever amended again, revision of the required labeling statement to include an effective date may be necessary.

One commenter requested that the Commission revise the proposed labeling statement to indicate that the insulation meets the requirements of GSA Specification HH–I–515D rather than the requirements of the amended standard for flammability and corrosiveness. The Commission has not made this change because the Commission's amended standard does not contain all of the requirements of the GSA specification, and contains some changes to the flame resistance and corrosiveness provisions of the GSA specification.

Several commenters expressed approval of the requirements of proposed §§ 1209.39(a)(1)(iii) and 1209.39(a)(2) which specify that the date

of manufacture by day, month, and year must be included on the label on each container of insulation or on the separate certificate accompanying insulation not sold in containers. One commenter noted that the date of manufacture should be permitted to appear in code. The Commission points out that coding of the date of manufacture is explicitly sanctioned in proposed §§ 1209.39(a)(1)(iii), and 1209.39(a)(2) as well as in the final rule, below.

One commenter urged the Commission to revise proposed § 1209.39(a)(1)(iii) to allow the date of manufacture to appear anywhere on the bag, as long as the date is conspicuous and appears in letters and figures meeting the size requirements in the proposal. The commenter is a manufacturer of cellulose insulation who uses stamping equipment to mark his bags with the date of manufacture. The commenter pointed out that his current equipment could not be set to place the date of manufacture on the same part of the bag where the required labeling statement would appear.

The Commission recognizes that the language of the proposal suggests that all four elements of the certificate of compliance (i.e., the statement of compliance with the applicable standard; the name of the manufacturer, importer, or private labeler issuing the certificate; the date of manufacture; and the place of manufacture) must appear in a single label on the containers of insulation. The Commission does not believe, however, that all four elements must appear at the same place on the container for the certificate of compliance to serve its intended function, so long as all of the required information appears legibly in figures and letters of the specified size. Therefore, the Commission has revised the language of § 1209.39(a)(1) below to indicate that each of the elements of the certificate of compliance may appear anywhere on the container and that the elements need not appear at the same place on the container.

c. *Responsibilities of private labelers and importers.* Proposed §§ 1209.39 (b) and (c) and proposed § 1209.40 indicate that when a private labeler or importer of cellulose insulation is the party closest to the consumer in the chain of distribution, the private labeler or importer is responsible for issuing the certificate of compliance. While the proposed rule allows private labelers and importers to issue certificates which are based upon testing performed by or for the manufacturer of the product, the proposal also provides that the private labeler or importer who certifies is ultimately responsible for ensuring that all testing has been performed properly and that all records of testing are accurate and complete.

A comment from the Federal Trade Commission suggested that the proposal be modified to state that private labelers and importers issuing certificates of compliance based on tests of the manufacturer have only a good faith responsibility for relying on the adequacy of testing and recordkeeping done by or for the manufacturer.

The Commission has not changed the language of § 1209.39 (b) and (c) in response to this comment. The Commission believes that private labelers and importers should have more than a good faith responsibility for relying on the integrity of the manufacturer's tests and testing records. With respect to importers, the Commission notes that the manufacturers in question are outside the U.S. and that it is, therefore, essential that a burden be placed on the importers, who are within the U.S., to take all reasonable steps to assure the adequacy of the manufacturer's tests. The Commission also believes that it is appropriate that private labelers who put their brands or trademarks on products be expected to take all reasonable steps to assure themselves of the adequacy of a manufacturer's tests. The Commission points out that these conclusions are consistent with the language of section 19(a)(6) of the CPSA which makes it a prohibited act to "issue a false certificate if such person *in the exercise of due care* has reason to know that such certificate is false or misleading in any material respect * * *" [emphasis added].

5. *Economic issues.* In the preamble to the proposed rule the Commission estimated the costs associated with the reasonable testing program, recordkeeping, and labeling requirements of the proposed certification rule and concluded that the costs of the proposed rule would not be burdensome.

Two commenters were concerned about the cost of labeling bags or containers in inventory on the effective date of the amended standard for compliance with the amended standard.

In the proposed certification rule, the Commission estimated that hand stick-on labels for bags or containers held in inventory would add approximately 2½ cents to the cost of each container of insulation, as well as an application cost of approximately 4 cents per container. The Commission points out that these are one-time costs during a limited period necessary to deplete inventories. While a few small manufacturers may have a significant inventory of bags or containers without the appropriate label on hand at the time of the effective date, Commission staff interviews with manufacturers indicate that, in general, the manufacturers see no major difficulties with one-time labeling costs for inventory containers. Because the Commission believes that consumers should be able on the effective date of the amended standard to identify complying containers of insulation, the Commission has not changed the certification rule in response to these comments.

Another commenter objected to the requirement in the proposed rule to mark each container of insulation with the date of manufacture by day, month, and year. The commenter stated the requirement would cost his company 5 cents per bag and would result in an $1800 per week revenue loss.

Commission staff contacted this commenter who indicated that the calculations underlying the claims in his letter were inaccurate and that his costs per week would be substantially less than $1800.

Other manufacturers contacted by Commission staff generally stated that date stamping containers of insulation would not create any great problem or expense.

The Commission points out that if an employee earning $5.00 per hour could stamp unfilled containers at a rate of 10 per minute, the cost of date stamping a container would be less than 1 cent per container for labor. (If the employee could work only half as fast, then the cost would increase to about 2 cents per container.) The manufacturing capacity of small cellulose insulation manufacturers is generally between 1000 and 2000 containers of insulation per shift. Based on these estimates, for capacity operations, the cost of date stamping the containers would be in the range of $50.00 to $200.00 per week. For small producers, however, present production is believed to be only a fraction of capacity.

One commenter was concerned that responsible manufacturers would be at a competitive disadvantage to unscrupulous manufacturers because of the self-executed certification program. Another commenter stated that self-certification unfairly allows small firms to undersell other firms. The commenter stated this could occur because small firms might do their own testing and certifying at low cost while many larger firms, who are already using commercial testing laboratories to certify

compliance with the interim standard, would presumably continue this practice under the amended standard.

As indicated above, for the reasons discussed, the Commission declines to incorporate mandatory third party certification in this rule. Under the rule, manufacturers are free to do their own testing and certifying or to use outside commercial laboratories. While an unscrupulous manufacturer might seek to take advantage of the testing flexibility in the rule, the Commission emphasizes that all cellulose insulation subject to the amended standard must meet that standard on the effective date. The Commission will test for compliance with the amended standard by using the test procedures contained in that standard.

The Commission is aware that certain small firms have been pricing their product lower than large firms. Rather than the existence of self-certification, however, the differences in transportation costs and fixed costs appear to be the main reasons small manufacturers can sometimes undersell larger manufacturers.

6. *Effective date.* The Commission proposed that the certification rule, like the amended standard, be applicable to cellulose insulation manufactured after October 15, 1979.

One commenter suggested that the effective date of the certification rule be delayed until December 31, 1979 in order to allow manufacturers sufficient time for qualifying their product for compliance with the amended standard. The commenter noted that if the effective date is not extended, commercial testing laboratories may not be able to complete qualification testing of manufacturers' products on a timely basis. Another commenter recommended that the October 15 date be extended, at least as to the requirement for certifying with labels on containers of insulation. The commenter, a large manufacturer, stated that small manufacturers can more easily comply with the labeling requirement because on October 16 they will have fewer containers in inventory to mark.

The Commission recognizes that the period of time between publication of the final amended standard and the certification rule and the effective date (approximately 14 weeks) in which manufacturers must develop and test products and produce complying packaging is somewhat limited. Nevertheless, the Commission believes that there is sufficient time for most manufacturers to qualify their products. Many manufacturers have already begun testing their cellulose insulation for compliance with the proposed amendment. In the last few months commercial laboratories' testing capacity for the amendment, i.e., the number of specimens that can be tested per month, has increased significantly.

The Commission has decided not to extend the proposed effective date of the amended standard or the certification rule. As is discussed in the preamble to the amended standard published elsewhere in this issue of the **Federal Register**, the primary purchasing season of insulation would be missed if the effective date was extended as requested. (September is the beginning of the purchasing season and late November is normally the time of greatest demand.) The Commission, further, believes that the effective dates of the amended standard, certification rule, and labeling requirement for proper installation of cellulose insulation should coincide. Once the standard is in effect, even without a certification rule, manufacturers are required by section 14(a) of the CPSA to certify compliance with the standard and to base their certificates on a test of each product or upon a reasonable testing program.

The Commission also believes that the proposed effective date of October 16, 1979 will allow most manufacturers time to draw down inventories of bags or containers which are labeled under the interim rather than the amended standard and thereby, limit the need for hand stick-on labels.

The Commission points out that the final version of the certification rule, below, includes at § 1209.41 an explanation of when insulation is "manufactured" for purposes of the rule. "Manufactured" is defined as that point in time when the cellulose insulation is packaged in the bag or other container in which it will be sold. Insulation which is not sold in bags or containers is "manufactured" when the insulation leaves the manufacturing site to be sold

7. *Miscellaneous comments.* One commenter referred to a statement in the preamble of the proposal which noted that the frequency of insulation samples failing the tests in the amended standard might be reduced by the availability of commercial pre-mix chemical formulations and observed that 90 percent of failures are not due to pre-mixes but to the manufacturing process itself. The Commission recognizes that a number of factors may be involved in a particular test failure, including the technical competence and skill of a manufacturer. In the preamble statement, the Commission was not, in any sense, guaranteeing passing results from the use of a pre-mix chemical formulation, but was simply noting that such formulations might aid certain manufacturers in producing complying products.

One commenter urged the Commission to require each manufacturer to have a quality control department. The same commenter requested a list of independent testing laboratories qualified to certify compliance with the amended standard.

Sections 14 of the CPSA authorizes the Commission to prescribe reasonable testing programs for consumer products subject to safety standards and to prescribe the form and content of labels for such consumer products. However, the Commission does not have the authority to require manufacturing plants to conform to a particular organizational structure. In addition, the Commission believes that requiring each insulation manufacturer to have a quality control section would not be a useful effort since it would not necessarily produce any greater compliance with the amended standard. As far as obtaining a list of qualified laboratories, it should be noted that CPSC does not have a list of "Commission-approved" laboratories. However, the National Voluntary Laboratory Accreditation Program, which is discussed earlier in this preamble, may in the future be able to accredit laboratories for their ability to perform the tests in the amended standard.

Another commenter stated that the certification rule should require all manufacturers to register each of their plant locations.

The Commission has not incorporated such a requirement in the final rule, below, because this information is, in most instances, already available to CPSC and if not currently available to CPSC, would be obtainable through Federal and state governmental agencies, associations of cellulose insulation manufacturers, trade publications, or individual manufacturers.

Environmental Considerations

In the preamble to the proposed certification rule, the Commission noted that it had conducted an environmental assessment of the proposed amended standard which concluded that the proposed amendment would have no significant effect on the environment. (Copies of this assessment are available in the Office of the Secretary of the Commission.)

The Commission also stated its belief that the proposed certification rule

would have no significant effect on the environment. The Commission pointed out that its interim rules for carrying out its responsibilities under the National Environmental Policy Act (see 16 CFR Part 1021; 42 FR 25494) provide that product certification or labeling rules normally have no potential for affecting the environment and that environmental review of such rules is not required.

The Commission received no public comments on environmental issues involving the certification rule. Therefore, the Commission concludes that the final rule, below, will have no significant effect on the human environment and that no further environmental review is necessary.

Conclusion and Proposal

Having considered the public comments as well as the need for and the economic impact of the certification requirements set forth below, the Commission concludes that the requirements are reasonable and not unduly burdensome in light of the need for the rule. Therefore, pursuant to sections 14 and 16 of the CPSA (15 U.S.C. 2063 and 2065), the Commission amends Title 16, Chapter II, Subchapter B, by adding a new Subpart B to Part 1209, reading as follows:

PART 1209—INTERIM SAFETY STANDARD FOR CELLULOSE INSULATION

Subpart B—Certification

Sec.

1209.31 Purpose and applicability.
1209.32 Definitions.
1209.33 Reasonable testing program.
1209.34 Qualification testing.
1209.35 Product specification.
1209.36 Production testing.
1209.37 Corrective actions.
1209.38 Records.
1209.39 Certification of Compliance.
1209.40 Certification responsibility; multiple parties.
1209.41 Effective date.

Authority: Secs. 14, 16; 86 Stat. 1220, 1222; (15 U.S.C. 2063, 2065).

§ 1209.31 Purpose and applicability.

(a) *Purpose.* The purpose of this Subpart B of Part 1209 is to establish requirements that manufacturers, importers, and private labelers must follow to certify that their products comply with the Amended Interim Standard for Cellulose Insulation (16 CFR Part 1209, Subpart A). This Subpart B includes requirements for conducting a reasonable testing program, certifying with labels and separate certificates, and recordkeeping.

(b) *Applicability.* (1) Cellulose insulation which is subject to the standard includes all cellulose insulation, manufactured after the effective date (as described in § 1209.41), produced or distributed for sale to, or for the personal use, consumption, or enjoyment of, consumers in or around a permanent or temporary household or residence, a school, in recreation or otherwise. The standard applies to cellulose insulation that is produced or distributed for sale to consumers, for their direct installation or use, as well as cellulose insulation that is produced or distributed for installation by professionals.

(2) The term "cellulose insulation" is defined in § 1209.2(a) of the standard to mean cellulosic fiber, loose fill, thermal insulation that is suitable for blowing or pouring applications.

§ 1209.32 Definitions.

In addition to the definitions set forth in section 3 of the act and in section 1209.2 of the standard, the following definitions shall apply to this Subpart B of Part 1209:

"Private labeler" means an owner of a brand or trademark which is used on the label of cellulose insulation subject to the standard which bears a private label as defined in section 3(a)(7) of the act (15 U.S.C. 2052(a)(7)).

"Production interval" means a time span determined by the manufacturer, private labeler. or importer to be appropriate for conducting a test or series of tests on samples of the cellulose insulation being produced to demonstrate that the product meets the requirements of the standard. An appropriate production interval may vary from test to test. The time period for a production interval shall be short enough to ensure that if the samples selected for testing comply with the standard or a portion of the standard, the insulation produced during the period will meet the standard or the appropriate portion of the standard.

§ 1209.33 Reasonable testing program.

(a) *General.* Section 14(a) of the Consumer Product Safety Act (15 U.S.C. 2063(a)) requires each manufacturer, importer, or private labeler of a product which is subject to a consumer product safety standard to issue a certificate of compliance with the applicable standard and to base that certificate upon a test of each item or upon a reasonable testing program. Because it is not practical to test each item subject to the standard, a reasonable testing program shall be used to support certificates of compliance for cellulose insulation.

(b) *Requirements of testing program.* A reasonable testing program for cellulose insulation is one which demonstrates with reasonable certainty that insulation certified to comply with the standard will meet all requirements of the standard. Manufacturers, private labelers, and importers shall determine the types and frequency of testing for their own reasonable testing programs. A reasonable testing program may include either the tests prescribed by the standard, or any other reasonable test procedures. However, a reasonable testing program cannot consist of tests which the party issuing the certificate of compliance knows (or through the exercise of reasonable diligence should know) will pass or accept insulation which will yield failing results when subjected to any of the tests in the standard. All reasonable testing programs shall consist of four elements:

(1) Qualification tests which must be performed on samples of the manufacturer's cellulose insulation to demonstrate that the product is capable of passing the tests prescribed by the standard.

(2) A description of the cellulose insulation which passed the qualification testing. This description is known as the "product specification."

(3) Production tests, which must be performed at appropriate production intervals as long as the cellulose insulation is being manufactured.

(4) Corrective action, which must be taken whenever samples of the cellulose insulation yield unacceptable or failing test results.

(c) *Commission testing.* The Commission will test for compliance with the standard by using the test procedures contained in the standard, and will base enforcement actions for violation of the standard on the results of such testing.

(d) *Testing by third parties.* At the option of the manufacturer, importer, or private labeler, some or all of the testing for the reasonable testing program may be performed by a commercial testing laboratory. However, the manufacturer, importer, or private labeler is responsible for ensuring that all testing used to support the certificate of compliance has been properly performed with passing or acceptable results and for maintaining all records of such tests in accordance with § 1209.38 below.

§ 1209.34 Qualification testing.

(a) *Requirement.* Before any manufacturer, importer, or private labeler begins distribution in commerce of cellulose insulation which is subject

to the standard, samples of the insulation shall be tested for compliance with the standard. Manufacturers, importers, and private labelers shall determine the types of tests for qualification testing.

(b) *Timing, Sampling.* Any or all of the qualification testing required by this § 1209.34 may be performed before the effective date of the standard. Manufacturers, private labelers, or importers may select samples for qualification testing of a product in any manner they desire.

§ 1209.35 Product specification.

(a) *Requirement.* Before any manufacturer, importer, or private labeler distributes in commerce cellulose insulation which is subject to the standard, it shall ensure that the insulation is described in a written product specification.

(b) *Contents of Specification.* The product specification shall include the following information:

(1) A description of the equipment used to manufacture the insulation, including the model number and names of the equipment manufacturers, and details of any modification made to any item of equipment.

(2) A description of the cellulosic stock material used to manufacture the insulation, identifying the extent of impurities allowed.

(3) The formulation of the fire-retardant chemicals added, including their chemical constituents and their form (for example, granulated, powdered, or liquid); the amount of fire-retardant chemicals present in the finished insulation, expressed as a percentage of the total weight of chemicals and cellulosic stock; the average weight of chemicals per bag; and the name and address of each chemical supplier. Where the chemical composition or formula of a commercially pre-mixed fire retardant is not known to the insulation manufacturer, the pre-mixed fire retardant may be described simply by the name and address of the supplier and its brand or trade name.

(4) A description of the tests which were used to qualify the product as well as the dates of performance and results and actual values, where applicable, of the tests.

(5) Any other information necessary to describe the insulation.

(c) *Distribution in Commerce.* After the qualification testing required by § 1209.34 has been completed with acceptable results and the product specification required by this § 1209.35 has been recorded, the cellulose insulation may be manufactured and distributed in commerce, subject to the provisions of § 1209.36.

(d) *New Product.* Whenever a manufacturer, private labeler, or importer makes any change to any item of equipment, cellulosic stock material, or formulation of a fire-retardant chemical, or any other factor which is likely to affect the ability of the cellulose insulation to meet the standard, that change will result in a new cellulose insulation product, requiring the preparation of a new product specification. The new product must be subjected to qualification tests and must yield passing or acceptable results.

§ 1209.36 Production testing.

(a) *General.* Manufacturers, private labelers, and importers shall test the cellulose insulation periodically as it is manufactured to demonstrate that the product being manufactured is substantially similar to the product which passed the qualification testing and to demonstrate that the product being manufactured meets the requirements of the standard.

(b) *Types and frequency of testing.* Manufacturers, private labelers, and importers shall determine the types of tests for production testing. Each production test shall be conducted at a production interval short enough to ensure that if the samples selected for testing meet the standard or a portion of the standard, the insulation produced during the interval will also meet the standard or the appropriate portion of the standard.

(c) *Test failure.* If any test yields failing results, production must cease and the faulty manufacturing process must be corrected (see § 1209.37). In addition, the material from which the samples were taken may not be distributed in commerce unless the material can be corrected (see § 1209.37) so as to yield passing results and meet the standard. Cellulose insulation that does not comply with the standard cannot be sold or offered for sale.

§ 1209.37 Corrective actions.

(a) *Test failure.* When any test required by § 1209.36 yields failing or unacceptable results, corrective action must be taken. Corrective action includes changes to the manufacturing process as well as reworking the insulation product itself. Corrective action may consist of equipment adjustment, equipment repair, equipment replacement, change in chemical formulation, change in chemical quantity, change in cellulosic stock, or other action deemed appropriate by the manufacturer, private labeler or importer to achieve passing or acceptable test results.

(b) *New product.* If any corrective action required by this § 1209.37 results in a change in the product specification and a new cellulose insulation product (see § 1209.34(b)), the product specification for the new product must be recorded in accordance with § 1209.35, and qualification tests must be performed with passing or acceptable results in accordance with § 1209.34, before the new product is distributed in commerce.

§ 1209.38 Records.

(a) *Establishment and maintenance.* Each manufacturer, importer, and private labeler of cellulose insulation subject to the standard shall establish and maintain the following records which shall be available to any designated officer or employee of the Commission upon request in accordance with section 16(b) of the act (15 U.S.C. 2965(b)):

(1) A record of each product specification containing all information required by § 1209.35. (This includes information concerning the types of qualification tests as well as the results from these tests.)

(2) Records to demonstrate compliance with the requirements for production testing in § 1209.36, including a description of the types of production tests conducted and the production interval selected for performance of each production test.

(3) Records of all corrective actions taken in accordance with § 1209.37, including the specific action taken, the date the action was taken, and the test failure which necessitated the action. Records of corrective action must relate the corrective action taken to the product specification of the insulation product which was the subject of that corrective action, and the product specification of any new product which results from any corrective action.

(4) Records indicating exactly which insulation material is covered by each certificate of compliance issued.

(b) *Retention.* (1) *Product specification.* The records of each product specification shall be retained for as long as the cellulose insulation covered by that specification is manufactured and for a period of two (2) years thereafter.

(2) *Other records.* Records of production testing, corrective actions taken, and certificates issued shall be maintained for a period of two (2) years.

(c) *Confidentiality.* Requests for confidentiality of records provided to the Commission will be handled in accordance with section 6(a)(2) of the CPSA (15 U.S.C. 2055(a)(2)), the Freedom of Information Act as amended (5 U.S.C. 552), and the Commission's regulations under that act (16 CFR Part 1015, February 22, 1977).

§ 1209.39 Certification of compliance.

(a)(1) *Responsibilities of manufacturer for insulation sold in bags.* Manufacturers of cellulose insulation subject to the standard which is sold in bags or other containers shall certify compliance with the standard by marking each bag or container with the following information:

(i) The statement "This product meets the amended CPSC standard for flame resistance and corrosiveness of cellulose insulation." (This statement is the same statement provided in § 1209.9 of the standard; it need not appear twice on the bag or container.)

(ii) The name of the manufacturer, private labeler, or importer issuing the certificate of compliance. See § 1209.39 (b) and (c), below.

(iii) The date of manufacture by day, month, and year.

(iv) The place of manufacture, by city, state, and zip code, or in the case of products manufactured outside the United States, by city and country.

The information required by this § 1209.39(a) may appear anywhere on the bag or container. The information required need not appear at the same place on the bag or container. The information shall be permanent until the bag or container is opened and used. The information shall be conspicuous and must appear in letters and figures at least ¼ inch in height. The date and place of manufacture may be in code, provided the person or firm issuing the certificate maintains a written record of the meaning of the code that can be made available to consumers, persons in the chain of distribution, and the Commission upon request.

(2) *Insulation not sold in bags or containers.* The manufacturer of cellulose insulation subject to the standard which is not sold in bags or other containers shall certify compliance with the standard by accompanying each shipment or delivery of the product, with a document such as an invoice, bill, statement, or separate document, which states the following: "This product meets the amended CPSC standard for flame resistance and corrosiveness of cellulose insulation. This material was manufactured on (insert day, month, and year of manufacture) at (insert city, state, and zip code, or in the case of insulation manufactured outside the United States, city and country)." The certificate of compliance must also contain the name of the manufacturer, private labeler, or importer issuing the certificate. See §§ 1209.39 (b) and (c), below. The certificate of compliance must appear in letters and figures which are conspicuous and legible. The date and place of manufacture may be in code, provided the person or firm issuing the certificate maintains a written record of the meaning of the code that can be made available to consumers, persons in the chain of distribution, and the Commission upon request.

(b) *Responsibilities of private labelers.* A private labeler who distributes a product subject to the standard which is manufactured by another person or firm but which is sold under the private labeler's name, brand, or trademark must issue the certificate of compliance required by section 14 of the Consumer Product Safety Act and this § 1209.39. If the testing required by this Subpart B of Part 1209 has been performed by or for the manufacturer of the product, the private labeler may rely on any such tests to support the certificate of compliance if the records of such tests are maintained in accordance with § 1209.38, above. The private labeler is responsible for ensuring that all testing used to support the certificate of compliance has been performed properly with passing or acceptable results, and that all records of such tests are accurate and complete.

(c) *Responsibilities of importers.* The importer of any product subject to the standard must issue the certificate of compliance required by section 14(a) of the act and this § 1209.39. If the testing required by this Subpart B of Part 1209 has been performed by or for the foreign manufacturer of the product, the importer may rely on any such tests to support the certificate of compliance if the importer is a resident of the U.S. or has a resident agent in the U.S. and the records are maintained in the U.S. in accordance with § 1209.38 above. The importer is responsible for ensuring that all testing used to support the certificate of compliance has been performed properly with passing or acceptable results, and that all records of such tests are accurate and complete.

§ 1209.40 Certification responsibility, multiple parties.

If there is more than one party (i.e., manufacturer, private labeler, or importer) otherwise subject to the requirements of this Subpart B of Part 1209 for certain cellulose insulation, only the party closest to the consumer in the distribution chain is required to issue a certificate.

§ 1209.41 Effective date.

The requirements of this Subpart B of Part 1209 shall become effective on October 16, 1979. Any cellulose insulation manufactured after October 15, 1979 must be certified as complying with the standard. Cellulose insulation which is sold in bags or other containers is "manufactured" when the insulation is packaged in the bag or other container in which it will be sold. Insulation which is not sold in bags or containers is "manufactured" when the insulation leaves the manufacturing site to be sold.

Dated: July 2, 1979.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

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16 CFR Part 1404

Cellulose Insulation Labeling Requirement

AGENCY: Consumer Product Safety Commission.

ACTION: Final rule

SUMMARY: The Commission issues a final rule to require manufacturers of cellulose insulation to give information to installers and consumers concerning the fire hazard of improper installation of the product. The rule requires the manufacturer to label containers of cellulose insulation to recommend installing the insulation away from recessed lighting fixtures and exhaust flues of heat producing devices or apparatus, such as furnaces, water heaters, and space heaters. The Commission is issuing this rule since it believes that consumers and installers need this information to avoid the fire hazard associated with improperly installed cellulose insulation. The effect of this rule should be to reduce the likelihood of injuries from fires resulting from improper installation of cellulose insulation.

DATES: Cellulose insulation manufactured after October 15, 1979 must comply with the labeling requirements issued in this notice.

FOR FURTHER INFORMATION CONTACT: Wade D. Anderson, Directorate for Compliance and Enforcement, Consumer Product Safety Commission, Washington, D.C. 20207, (301) 492-6400.

SUPPLEMENTARY INFORMATION:

A. Background

On July 11, 1978, the "Emergency Interim Consumer Product Safety Standard Act of 1978," Pub. L. 95–319, became law. This legislation amended the Consumer Product Safety Act (CPSA) (15 U.S.C. 2051 et seq.) by adding a new section 35 (15 U.S.C. 2082) that required the Commission to issue an interim consumer product safety standard for cellulose insulation, based on requirements for flame resistance and corrosiveness in General Services Administration (GSA) Specification HH–I–515C, as effective February 1, 1978.

As required by the statute, the Commission, on August 8, 1978, published the interim consumer product safety standard (16 CFR Part 1209) addressing the flammability and corrosiveness of cellulose insulation (43 FR 32540, corrected 43 FR 39564, September 6, 1978). All cellulose insulation manufactured after September 7, 1978 must comply with the interim standard.

The "Emergency Interim Consumer Product Safety Standard Act of 1978" also provides that until a final consumer product safety standard is in effect, the Commission must propose as an amendment to the interim standard each revision GSA issues that supersedes the requirements for flame resistance and corrosiveness in GSA Specification HH–I–515C. The Commission must issue the amendment unless the Commission determines, after consulting with the Secretary of Energy, that the amendment is not necessary to protect consumers from the unreasonable risk of injury associated with flammable or corrosive cellulose insulation or that implementation of the amendment will create an undue burden on persons who are subject to the interim consumer product safety standard.

On June 15, 1978, the General Services Administration issued GSA Specification HH–I–515D, which contains requirements for flame resistance and corrosiveness for cellulose insulation that supersede the requirements of GSA Specification HH–I–515C. As required by Pub. L. 95–319, the Commission proposed an amendment to its interim standard for cellulose insulation incorporating the flame resistance and corrosiveness provisions of HH–I–515D, along with several changes made by the Commission (44 FR 12872, March 8, 1979). The Commission also proposed a certification rule, with requirements that manufacturers, private labelers, and importers must follow to certify that their products comply with the amended interim standard (44 FR 12864, March 8, 1979). Elsewhere in this issue of the **Federal Register**, the Commission has issued both a final regulation amending the interim standard and a final certification rule. The amendment and certification rule will become effective October 16, 1979, the same date that the labeling regulation issued here will become effective.

The amendment to the interim standard establishes performance requirements for cellulose insulation to address the unreasonable risk of injury from flammable or corrosive cellulose insulation. However, the amendment does not adequately address hazards that may be caused by the improper installation of insulation. In the *Conference Report* on Pub. L. 95–319 the conferees stated that improper installation of cellulose insulation has been identified as a major cause of insulation fires. The conferees stated their expectation that the Commission would issue a rule under section 27(e) of the act to require manufacturers to provide safety information, on installation, to consumers (H.R. Rept. No. 95–1322, 95th Congress, 2d. Sess. 9(1978)).

Section 27(e) of the CPSA (15 U.S.C. 2076(e)) authorizes the Commission to require manufacturers of consumer products to provide the Commission with such performance and technical data related to performance and safety as may be required to carry out the purposes of the act. Section 27(e) also authorizes the Commission to require manufacturers of consumer products to give notification of such performance and technical data at the time of original purchase to prospective purchasers and to the first purchaser of such product for purposes other than resale, as it determines necessary to carry out the purposes of the act. As provided in section 2(b) of the CPSA (15 U.S.C. 2051(b)), one purpose of the act is to protect the public against unreasonable risks of injury associated with consumer products.

On December 20, 1978, the Commission proposed a rule under section 27(e) of the act to require manufacturers to provide safety information, on installation, to consumers and professional installers (43 FR 59390). The Commission published the proposal after considering fire incident information, information concerning improper installation, and technical information indicating that improperly installed cellulose insulation presents a serious risk of injury. Based on this information, the Commission concluded that a serious risk of injury from fire is associated with cellulose insulation that is improperly installed too close to the sides or over the top of a recessed electrical light fixture or where cellulose insulation is installed too close to the exhaust flues from heat producing devices or apparatus such as furnaces, water heaters, and space heaters. Cellulose insulation that is improperly installed may ignite in a relatively short time as a result of the heat that is trapped by the insulation and builds up around the ignition source. The insulation may ignite even if the insulation complies with the amended interim standard based on HH–I–515D and even if a recommended wattage bulb is used in the recessed electrical light fixture. The ignition of the insulation can lead to flaming combustion of the structure, exposing consumers to the risk of serious injury from fire.

B. Explanation of the Rule

The regulation issued here at § 1404.4(a) requires manufacturers of cellulose insulation to provide prospective purchasers and the first purchaser for purposes other than resale (consumers and professional installers) with performance and technical data by placing a label on containers for cellulose insulation. The label instructs persons to avoid the flammability hazard by not installing or maintaining the product over or within three inches of the sides of recessed electrical light fixtures. The label suggests that persons installing the insulation use a barrier to permanently keep the insulation away from the recessed electrical light fixture. The label advises persons installing the insulation to check with local building or fire officials for guidance on barriers and installation requirements. The labeling statement at § 1404.4(a) also cautions persons to avoid the flammability hazard by not installing or maintaining the product near exhaust flues from heat-producing devices and apparatus such as furnaces, water heaters, and space heaters.

The label also requires cellulose insulation manufacturers to include a request to installers to remove the label and give it to the consumer after the insulation has been installed. The Commission has included this request in the label since the label information would benefit consumers by informing them of the importance of keeping the insulation away from recessed light fixtures and heat producing devices.

As required by § 1404.4(b) the label statement must appear prominently and

conspicuously on the cellulose insulation container in letters of a specified minimum height and enclosed within a rectangle formed by lines of a specified minimum width. The required statement must be printed legibly in a color which contrasts with the background.

Section 1404.4(c) provides that manufacturers may use any type of label, including one which is pressure-sensitive or glued-on, to meet the requirement in this notice provided the label will remain attached to the container for the expected time interval between the manufacture of the product and its installation.

The label requirement in this section is in addition to the label required by § 1209.9 of the Commission's amended interim standard for cellulose insulation, and is in addition to the label required by section 1209.39(a) of the Commission's certification rule (16 CFR Part 1209, published elsewhere in this issue of the **Federal Register**). Manufacturers may combine these labeling statements in the same label.

C. Response to Comments

In response to the proposal, the Commission received thirty-two comments from manufacturers, trade associations, consumer groups, and other interested persons. These comments are available for inspection in the Office of the Secretary of the Commission. An explanation of the relevant issues raised by the comments, and the Commission's response, is given below:

(1) *Need for the labeling requirement.*—Several commentors supported the labeling requirement as being necessary and appropriate to warn persons installing cellulose insulation of the serious risk of fire associated with installing cellulose insulation improperly around recessed lighting fixtures or other heat producing devices. One commentor stated that the benefits of the warning label would far outweigh any costs of the label. Another commentor stated an opinion that the label would have sufficient impact to prevent many fires even though everyone may not follow the label instructions. One commentor stated that the labeling requirement is a reasonable and proper use of the Commission's authority to alert the public. One commentor, the staff of the Bureau of Consumer Protection of the FTC, explained that the CPSC rule would not be duplicative or in conflict with the FTC's proposed trade regulation rule concerning the labeling and advertising of home insulation.

Several commentors questioned the need for the label. One commentor stated that voluntary labeling should be encouraged, rather than mandatory labeling. According to another commentor, the labeling requirements are unwarranted since no deaths have been caused by cellulose insulation.

As a result of the serious risk of injury from fire associated with cellulose insulation that is improperly installed and the lack of clear, uniform instructions to installers, the Commission agrees with those commentors who believe that the labeling requirement is necessary. The Commission does not believe that the absence of deaths associated with cellulose insulation means that a labeling requirement is not necessary. Although the Commission has not received reports of deaths associated with improperly installed cellulose insulation, the Commission has received reports of fire incidents associated with improperly installed cellulose insulation. The fire incident information and technical information concerning the effects of improperly installing cellulose insulation, discussed in section *G.* of this preamble, show that there is a serious risk of injury from fire associated with improperly installed cellulose insulation. The Commission does not believe that a voluntary labeling program would be an effective way in which to provide installers with information concerning the safe installation of insulation, since there are many manufacturers of insulation, making it difficult to monitor compliance, and since the labeling of each manufacturer could be different, even if the Commission suggested a label.

One commentor stated that while the labeling requirement was necessary, labeling was only part of the solution. According to the commentor, since installers may not read labels, an educational program for installers and consumers may be necessary. Another commentor stated that the labeling rule would not solve the problem. According to the commentor the manufacturer of the light fixture and the electrical contractor should be held responsible for providing sufficient protection. Several commentors suggested that requirements be established for recessed lighting fixtures to minimize the fire hazard. One commentor suggested that the Commission ban certain recessed lighting fixtures without reflective liners.

The Commission agrees with the commentor who suggested that labeling is not the entire answer. The Commission has planned an information and educational program that will be directed toward professional installers and consumers. As part of this program, the Commission is planning to hold a series of workshops across the country for installers, building code officials, and other local officials in order to inform them of proper installation practices for cellulose insulation. Another part of the program will provide pamphlets and articles directed toward consumers which will highlight proper installation of insulation materials. Although the Commission believes that manufacturers of recessed electrical light fixtures and electrical contractors can help improve the safety of light fixtures, the Commission still believes that the labeling rule is needed since many recessed electrical light fixtures have already been installed without protective barriers or other devices for fire protection. Since many recessed electrical light fixtures have already been installed without protective barriers, the Commission does not believe that prohibiting certain types of recessed light fixtures would, in itself, solve the problem. In addition, the label is necessary since it warns against fires that may be caused where the insulation is improperly installed around exhaust flues or other heat-producing devices, in addition to recessed electrical light fixtures.

(2) *Whether the labeling requirement should apply to other types of insulation.*—Several commentors claimed that the labeling requirement should be applied to other types of insulation, as well as cellulose insulation. One commentor claimed that fibrous glass insulation with asphalt backed vapor barriers could lead to a fire when the insulation is installed next to, or close to, chimney flues or recessed lighting. Another commentor stated that a fire had resulted where a vapor barrier on fibrous glass insulation ignited. Another commentor stated that all improperly installed loose-fill insulation presents fire hazards. According to the commentor, the Commission was arbitrary in not requiring similar labeling for other types of insulation. One commentor stated that all types of insulation should be kept away from recessed light fixtures since the insulation itself would trap heat, so that the light fixture could then overheat and cause an electrical fire. Other commentors claimed that the labeling requirement should be applied to all insulation since the National Electrical Code (NEC) includes similar instructions for all types of insulation. One commentor stated that the labeling

requirement should be applied to all types of insulation since the mineral wool insulation manufacturers have voluntarily agreed to label their products with similar installation instructions. In support of the argument that labeling should be required for all types of insulation, this commentor referred to tests conducted by the Commission staff in which the wood frame of the test box, but not the insulation itself, burned when the insulation was improperly installed. According to several commentors, the failure to include warnings concerning other types of insulation could mislead the consumer into believing that recessed light fixtures may be covered by other types of insulation.

In the proposal, the Commission stated that the labeling requirement was confined to cellulose insulation since most of the fire incident data available to the Commission involved cellulose insulation rather than other types of insulation, and since Congress has indicated its intent that the Commission develop a rule for cellulose insulation (43 FR 59393). The fire incident information available since the proposal still indicates that most fires involve cellulose insulation rather than other types of insulation. Information available to the Commission indicates that improperly installed cellulose insulation can smolder and sustain combustion. The Commission believes that these properties, which have not been shown to be associated with mineral wool or other types of insulation, could contribute to the fire hazard associated with improperly installed cellulose insulation.

The Commission's decision not to propose a requirement that other types of insulation be similarly labeled does not imply that other types of insulation should be installed improperly around recessed electrical light fixtures or heat sources. As several commentors have indicated, the NEC and other code authorities recognize that all types of insulation should be kept away from recessed electrical light fixtures and other heat sources. As one commentor stated, in tests conducted by the Commission staff the wood frame of the test box, rather than the insulation itself, burned when the insulation was improperly installed. The Commission stated in the proposal that members of the mineral wool insulation industry had agreed in principle to label their products to address, among other things, clearance around heat sources and proper installation of insulation with flammable vapor barriers (43 FR 59393). The Commission believes that all currently manufactured mineral wool insulation products are adequately labeled. Since mineral wool manufacturers have voluntarily labeled their products, the Commission does not believe that the lack of a mandatory requirement for mineral wool insulation would lead installers to believe that recessed electrical light fixtures may be covered by other types of insulation.

As a result of the information available at this time, the Commission does not believe it is necessary to extend the labeling requirement concerning the safe installation of cellulose insulation to include other types of insulation. However, the Commission will continue to monitor any available fire incident information and information concerning the flammability of other types of insulation. If the Commission obtains information in the future indicating that a mandatory labeling requirement is needed concerning the safe installation of other types of insulation, the Commission will propose such a requirement.

(3) *Labeling Statement.*—Several commentors requested that the content of the labeling statement be changed. One commentor suggested that the label include a statement concerning the need to ventilate cellulose insulation to prevent moisture from being trapped in the insulation. According to the commentor, the trapped moisture would increase the corrosiveness of the insulation and would adversely affect the permanency of the chemical fire retardants used in the insulation. Another commentor also recommended that the label address the effects of moisture on insulation and the structural integrity of the building.

The Commission believes that the corrosiveness requirements of the amended interim standard will be effective in virtually eliminating very corrosive combinations of flame retardant chemicals and cellulose insulation. Available information does not show that moisture in insulation will adversely affect the corrosiveness of flame-retardant chemical/insulation combinations meeting the amended interim standard. Based on presently available information, the Commission does not believe that moisture in insulation would lead to excessive migration of the flame retardant chemicals unless the insulation is excessively drenched. Limited data presently available indicates that in some instances moisture may actually improve the flame resistance of the insulation. The Commission also has no information indicating that a real risk of injury is presented by the possibility that moisture trapped in insulation meeting the corrosiveness provisions of the standard may adversely affect the structural integrity of the building. As a result, the Commission does not believe that the label should be revised as suggested by the commentors.

Several commentors suggested that the label be revised to explain what a permanent barrier is, and give examples of suitable barriers.

The Commission does not believe it is practical to list specific types of barriers on the label. The Commission has revised the label to advise installers and consumers to check with local building or fire officials for guidance on installation and barrier requirements.

One commentor recommended that the term recessed light fixture be better explained to eliminate any confusion by the home-owner who installs the insulation.

The Commission believes that the term recessed light fixture is generally understood by most installers of insulation. Although the Commission could include a lengthy general definition of the term, such a definition may lead to additional confusion among homeowners who install the insulation.

One commentor suggested that the order of the first paragraph of the label be revised to state that insulation should be kept "at least three inches away from recessed light fixtures, and that insulation should be kept away from the exhaust flues of furnaces, water heaters, space heaters or other heat producing devices."

The Commission believes that the order of the label is sufficiently clear in warning people to keep insulation away from other heat-producing devices. As proposed, the second paragraph of the label statement included instructions about heat producing devices in addition to recessed light fixtures. If the Commission adopted the change suggested by the commentor, the change may create confusion by separating the instruction not to place insulation over the light fixtures from the instruction to keep cellulose insulation at least three inches from the sides of recessed light fixtures.

One commentor suggested that the Commission also require manufacturers to include an additional label that could be affixed to the heat producing devices to remind consumers of the potential hazard.

Manufacturers may voluntarily include additional labels to be affixed to heat producing devices. However, the Commission does not believe it is necessary to require additional labels, since such labels would be duplicative

of the information on the label currently required.

One commentor claimed that the label should not recommend the use of open top barriers to keep cellulose insulation away from light fixtures and flues. The commentor stated that open top barriers are not effective since homeowners will attempt to eliminate drafts caused by the open top barrier by placing insulation in the barrier, thereby defeating the purpose of the barrier, or by placing a lid on the barrier after the installer has left. According to the commentor placing a lid on the barrier will cause temperatures to exceed acceptable limits for building materials. The commentor stated that an effective five sided protective device had been developed that prevented insulation and building materials from reaching ignition temperatures.

Although it is possible that some consumers may deliberately defeat the purpose of the barrier by placing insulation in the barrier or by covering the barrier, the Commission believes that a permanent open top barrier will generally be effective. If the installer removes the label and gives the label to the consumer, as requested, or if the consumer installs the insulation, then the label would inform the consumer of proper installation instructions. Although presently available information indicates that some closed top barriers may trap heat and lead to an electrical failure and subsequent potential fire associated with the light fixtures, some closed top barriers that have been designed to operate with insulation surrounding them may be effective when used with certain recessed electrical light fixtures. Since, in these instances, an open-top barrier would not be necessary, the Commission has revised the label to eliminate the specific reference to open-top barriers, and has removed the installation guidance concerning open-top barriers from the label. The Commission has revised the label to advise installers to check with local building or fire officials for guidance on installation and barrier requirements.

Several commentors suggested that the phrase "Warning" and "To Prevent Fires" be deleted from the label since the phrase implies a much greater degree of danger than exists in the real world. According to the commentors a simple "Caution" would be sufficient. One commentor suggested using the word "Caution" and the phrase "Potential Fire Hazard" instead.

As stated elsewhere in this notice, the Commission believes that a serious risk of injury is associated with cellulose insulation that is improperly installed. However, since the Commission believes that the word "Caution" and the phrase "Potential Fire Hazard" would be effective in presenting this message, the Commission has accepted the commentor's suggestion to change the label to include these statements. The Commission does not intend these changes to imply any less degree of danger. For example, under section 2(p)(1) of the Federal Hazardous Substances Act (15 U.S.C. § 1261(p)(1)) "Caution" and "Warning" are interchangeable as signal words for labeling hazardous substances.

One commentor claimed that the label should contain more explicit instructions for keeping insulation away from heat sources. According to the commentor, installers presently use many different methods for this purpose, and most of these methods are poor. The commentor recommended a particular aluminum barrier with warning markings as being effective in keeping insulation away from heat sources and also warning consumers. The commentor also claimed that the label would not be adequate to alert homeowners to the hazard. Several commentors claimed that the label statement requesting the installer to remove the label and give it to the consumer was not realistic and would not be followed in practice. One commentor suggested that, instead, manufacturers should be requested to provide consumers with fact sheets containing this information before the insulation is purchased.

The Commission believes that the labeling statement contains instructions that, if followed, will be effective in reducing the risk of injury from fires associated with improperly installed cellulose insulation. Since a number of different barriers may be effective in keeping cellulose insulation away from recessed lighting fixtures and other heat producing devices, the Commission does not believe that the label should specify any particular device. Some installers may not remove the label and give it to the consumer. However, since this action requires little effort on the part of the installer, the Commission believes that many installers will remove the label. The Commission will encourage this action in its information and education program directed toward installers. Since most cellulose insulation is installed by professional contractors, the Commission does not believe that requiring manufacturers to provide consumers with fact sheets at the time of purchase would be an effective way of conveying this information.

One commentor suggested that the word "cellulose" be eliminated from the insulation label so that cellulose insulation products are not given a negative connotation.

The Commission believes that the word "cellulose" should remain on the label to enable consumers to identify the insulation. The Commission has no information to indicate that a label identifying the insulation and providing proper installation instructions would give cellulose insulation products a negative connotation.

Another commentor suggested that the label also include summaries of test results conducted by the Commission staff on recessed lighting fixtures and cellulose insulation. According to the commentor, including this information would have a greater impact on the consumer, and make it less likely that the label would be ignored.

The Commission does not believe it is necessary to include such test results on the label since such results may become outdated by tests conducted in the future and since the inclusion of such results may confuse installers and consumers by resulting in a more lengthy label.

One commentor suggested that the label also include a statement about the proper installation of insulation around electrical outlets to prevent fires.

At the present time the Commission has not fully analyzed available data concerning the likelihood of fires associated with insulation installed around electrical outlets. For this reason, the Commission has not included a statement in the label concerning proper installation around electrical outlets.

Another commentor suggested that damaged electrical wires and aluminum wiring be included in the list of devices that cellulose insulation should be kept away from.

At the present time the Commission staff is considering the effects of various types of insulation and wiring. If the Commission determines that a hazard exists and that public notification is required concerning the effect of insulation and wiring the Commission will take appropriate action.

One commentor requested that the regulation specify the physical location of the label on the container.

The Commission does not believe that it is necessary to specify the physical location of the label on the insulation container, since the regulation at section 1404.4(b) specifies that the labeling must be prominent and conspicuous. As

discussed below, the regulation also specifies a minimum size for the labeling that will help ensure that the label is prominent and conspicuous regardless of where it appears on the container. These provisions will allow the manufacturer flexibility in locating the label on the container, while ensuring that the label is prominent and conspicuous for consumers and installers.

One commentor suggested that the Commission's toll free number be placed at the end of the label to assist in answering questions and obtaining additional information.

The Commission's telephone numbers are widely available through local telephone directories and information, so that consumers and professional installers may call the Commission for information concerning the proper installation of cellulose insulation. The Commission does not believe it is necessary to require the Commission's toll free number on the label, since the number is available by other means and since the number may change in the future.

One commentor stated that the proposed label is in conflict with the Oregon State Building Code and probably other building codes. According to the commentor, the Commission's regulation would confuse and complicate local building codes.

The commentor did not explain how the Commission's label conflicts with the Oregon State Building Code or other building codes. Since the Commission's label is based on provisions of the National Electrical Code, a code which forms the basis of many local building codes, the Commission does not believe that the label requirement is in conflict with many state or local building codes. Although the specific wording of the Commission's label may be different than the wording in certain building codes, the Commission believes that the meaning of the Commission's label is essentially the same as that of the National Electrical Code and many building codes, for installing cellulose insulation. The Commission has included a statement on the label that advises installers to check with local building or fire officials for guidance on installation and barrier requirements.

One commentor questioned the requirement that the letters of the label be at least ¼ inch in height. According to the commentor this requirement is unrealistic and would require approximately 81 square inches of space.

The Commission agrees with the commentor that the description of the size of the label at section 1404.4(b) should be revised, since there may be some ambiguity in interpreting the language in section 1404.4(b) that could result in an oversized label. Accordingly, the Commission has revised this section to specify that the word "Caution" must appear in capital letters at least ¼" high, the words "Potential Fire Hazard" and "Request to Installer" must appear in capital letters at least 3/16" high; and the remainder of the label statement must appear in capital letters at least 3/16" high with lower case letters in corresponding proportion but at least ⅛" high. As revised, the label would be approximately 6.75 inches by 5.5 inches, and would occupy approximately 37.125 square inches. The Commission believes that this revision will avoid ambiguity and would make the label statement sufficiently large to be readily apparent to prospective purchasers and installers of the product.

One commentor requested that the label include a statement explaining why there is a fire hazard involved.

The Commission does not believe that it would be appropriate to include a full explanation of the fire hazard scenario in the label, since such an explanation would be lengthy and would be likely to decrease the emphasis placed on the other information in the label. The Commission believes that the phrase "POTENTIAL FIRE HAZARD" on the label is sufficient to convey the importance of following the instructions on the label.

Several commentors suggested that manufacturers be allowed to design their own wording for the label, as long as the intent remains the same.

The Commission believes it is important that persons installing cellulose insulation be given clear and explicit installation instructions. In order to avoid inconsistencies that may cause confusion among professional installers and consumers, the Commission believes that uniform wording is necessary.

(4) *Economic effect of the labeling requirement.*—Several commentors suggested that the regulation would have a negative economic effect on the cellulose insulation industry. According to these commentors, the warning is so negative that it would discourage potential purchasers from buying the product.

The Commission does not agree with the commentors that the labeling requirement would have a negative economic effect on the cellulose insulation industry by deterring potential purchasers. The commentors have not presented any facts in support of their contention that there would be an adverse effect. The label required by the regulation contains simple and explicit installation instructions that are not alarming or negative. Based on a limited survey conducted by the Commission of 125 different cellulose insulation containers, the Commission found that nearly ninety percent of these containers had labeling warning against improper installation. Many of these labels were used in 1977, a period of record sales for the cellulose insulation industry.

(5) *Effective date of the labeling requirement.*—One commentor suggested that the effective date of the Commission's label requirement be made to coincide with the effective date of the label that would be required by the FTC's trade regulation rule for thermal resistance of insulation.

In order to alleviate possible burdens on cellulose insulation manufacturers, while presenting information to professional installers and consumers as soon as possible, the Commission has made the effective date of the section 27(e) labeling regulation October 16, 1979, the same date as the labeling requirement under the Commission's amended interim standard and certification rule. The FTC's trade regulation rule, which applies to all insulation manufacturers, will become effective at approximately the same time as the Commission's labeling requirements. The Commission's labeling regulation does not conflict with or duplicate disclosures that would be required by the FTC's trade regulation rule.

Another commentor requested that the August 31, 1979 suggested effective date of the regulation in the proposal be changed to June, 1979 since there is likely to be an increase in installations over the summer.

The Commission has changed the August 31, 1979 effective date in the proposal to October 16, 1979, so that the effective date coincides with the effective date of the amended interim standard and certification rule. Since this regulation is being issued in July, 1979 the Commission does not believe that an effective date in the summer of 1979 would provide manufacturers with sufficient notice to have containers properly labeled. Information available to the Commission indicates that the primary purchasing season for insulation is not in the summer but begins in September and is greatest in late November.

Another commentor suggested that the effective date be extended beyond

the proposed date of August 31, 1979. This commentor claimed that the extension was needed as a result of the large number of empty bags in inventory and the high cost of temporarily labeling these bags.

The Commission has changed the effective date of the labeling requirement from August 31, 1979 to October 16, 1979. This date is almost 15 weeks after publication of this notice and should provide most manufacturers with time to deplete a large number of empty bags in inventory, although some manufacturers may have a significant inventory of bags on hand on the effective date. For these manufacturers, there would be a one-time relabeling cost of approximately six to seven cents per bag using hand stick-on labels until the inventory of bags is depleted.

(6) *Additional Comments.*—One commentor questioned the effectiveness of the label, and stated that printed warnings on insulation packaging are frequently ignored.

The Commission believes that the label requirement is needed since some cellulose insulation bags are presently without labeling for proper installation and others are not clearly labeled. Although it is possible that some persons may ignore the warnings on the insulation packaging, the Commission believes that by requiring simple and explicit safety information the label requirement will increase the likelihood that professionals and consumers will install the product in a safe manner.

One commentor suggested that the Commission establish a licensing program for insulation contractors that would require proper application procedures and proper insurance coverage. Although state and local governments may license insulation contractors, under the CPSA the Commission does not have this authority. The Commission believes that the label requirements issued here, along with an information and education program directed toward installers and consumers will be effective in reducing the serious risk of fire associated with improperly installed cellulose insulation.

One commentor suggested that a uniform label be developed that incorporates all label disclosures required by the CPSC, FTC, and DOE. It is not practicable for the Commission to have the same effective date for its labeling requirements as the DOE, since the effective date of the Commission's amended interim standard and certification rule and the effective date of the labeling rule issued here is substantially before the scheduled effective date of the DOE rules. The FTC rule is scheduled to become effective at approximately the same time as the Commission's labeling requirements. The Commission has been working with the FTC and DOE to ensure that the label requirements of these agencies do not conflict and are not duplicative. For these reasons, the Commission has not accepted the commentor's suggestion.

D. Environmental Considerations

Based on its consideration of the potential environmental impact of the regulation set forth below, the Commission concludes that the environment will not be significantly affected and that an environmental impact statement is not necessary. The Commission's regulations for environmental review (16 CFR Part 1021, § 1021.5) provide that labeling rules are normally non-major actions with little or no potential for affecting the environment, so that an environment review is not normally required. The Commission believes that this labeling rule is not a major action anticipated to affect the environment.

E. Effective Date

The labeling requirements issued below apply to products manufactured after October 15, 1979. (For the purposes of this regulation, the cellulose insulation product is manufactured when the insulation is packaged in the bag or container intended to be sold to the installer or consumer.) The Commission believes that this date would allow most manufacturers time to deplete inventories before the fall peak purchasing season, since there are approximately 15 weeks between this publication of the final rule and its effective date. This interval should be sufficient time in which to order and develop new labels, to introduce them into production, and to bring manufacturers' inventory into compliance.

F. Penalties

Manufacturers, including importers, of cellulose insulation must comply with the requirements of the rule on the effective date. Failure to comply with the rule is a prohibited act, as specified in section 19(a)(9) of the CPSA, and could lead to civil and criminal penalties under sections 20 and 21 of the CPSA. In addition, section 22 of the act authorizes the Commission to obtain an injunction from a United States district court to restrain a violation of the labeling requirement.

G. Information Supporting the Labeling Requirement

Fire incident information available to the Commission indicates that there is a serious risk of injury from fire associated with improperly installed cellulose insulation. The Commission has 51 in-depth investigation reports [through April 15, 1979] which state the ignition source of fires involving cellulose installation. Thirty-one of the reports identify recessed electrical light fixtures as the ignition source. The Commission has seventeen consumer complaints and news reports stating an ignition source for fires involving cellulose insulation. Nine of these complaints and reports identified recessed lighting fixtures as the ignition source. The other ignition sources in the fire incident data include furnaces (including attic furnaces), a vent pipe from a stove, a drop light, cigarettes, a fire place, a ceiling exhaust fan, surface mounted lights, and damaged electrical wires. The in-depth investigations indicate that safety information is needed by professional installers of cellulose insulation as well as consumers who install their own insulation. Of forty-five investigations of incidents, where the installer was identified, forty-two incidents involved professional installation and three involved home-owner installation.

A review of the available in-depth investigations reveals patterns that explain how consumers could be injured in a fire resulting from improperly installed cellulose insulation. The families in eight reports were awakened by the smell of smoke, and, in one case, the house was filled with smoke. In four other incidents, the families were awakened by a passing policeman or other person and alerted to the fact that their home was on fire. The intensity of six fires extensively damaged or destroyed the home. All of the members of these families faced the possibility of injury or death if someone had not noticed the fire and/or smoke.

In addition, the Commission has received numerous fire incident reports indicating cellulose insulation as the first material to ignite and recessed light fixtures as the source of ignition. Most of these reports are Fire Incident Reports or computer print outs where the fire scenario is not developed. However, the Commission has obtained detailed narrative reports on some fires. Six fires in 1978 and 1979 from Oregon link the presence of cellulose insulation covering a recessed light fixture as the cause of heat build-up which resulted in a fire.

The Commission has information showing that cellulose insulation is being installed improperly around recessed lighting fixtures. CPSC investigators have inspected the attics of sixteen homes with recessed light fixtures that had cellulose insulation installed after January 1, 1976. (These homes were identified from calls to the CPSC Hotline. Although every home in the United States with the same characteristics did not have a chance of being selected for inspection, there is no reason to believe that the homes selected for inspection are atypical of other homes with cellulose insulation and recessed electrical light fixtures.) The inspections revealed that six out of the sixteen homes had cellulose insulation completely covering the recessed light fixtures. One home had cellulose insulation over rockwool insulation that totally covered the fixture. Another home had a fixture that was covered only by fibrous glass insulation. Two additional homes had cellulose insulation completely covering fixtures that were presumed to be protected by being surrounded by non-flammable material. In another home, cellulose insulation covered the light fixtures at installation, however, a utility inspector uncovered the fixture. The five remaining homes had light assemblies free of, or with only a small amount of insulation touching the fixture. In no home was the light fixture protected in such a way as to keep insulation permanently away from the light assembly.

In addition to the information concerning improper installation and fire incidents associated with improperly installed cellulose insulation, the Commission has the following technical information indicating that improperly installed cellulose insulation presents a serious risk of injury:

(1) *CPSC Insulation Recessed Light Report, July 1978 from D. Toms of the CPSC Engineering Laboratory to P. Armstrong, CPSC Directorate for Engineering Sciences.* This report, including video-taped experiments, concerns tests conducted by the CPSC laboratory involving 51 samples of cellulose insulation from 37 manufacturers and 23 recessed lights of various configurations. The laboratory results indicate that a fire may result when cellulose insulation that passes the radiant panel and smoldering combustion tests of GSA Specification HH–I–515D is installed around and over certain incandescent recessed lighting fixtures when used with recommended wattage bulbs.

The Commission staff conducted smoldering combustion tests and flooring radiant panel tests specified in HH–I–515D on 51 samples of cellulose insulation collected around the country by the Commission's field offices. The Commission staff selected 8 of the 51 samples of cellulose insulation. Six of these samples passed both the smoldering combustion test and radiant panel test. The printed labels on the bags of three of these eight samples claimed that the insulation had flame spread ratings under 25 as measured by the Steiner tunnel test referenced in HH–I–515C. The printed labels on the bags of five of the samples claimed that the insulation met all of the requirements of HH–I–515C. Each of the eight samples was placed one at a time in an attic mock-up section with a recessed electrical light fixture until smoldering combustion was evident. In two of the eight tests, the smoldering was allowed to continue until flaming was evident. The other tests were stopped before flaming was evident to prevent destruction of the test equipment. Flame was observed at the wood frame of the test box, and not from the insulation itself. One of the two flaming tests was recorded on video tape. In both of the flaming tests, electricity to the light fixture was shut off over 45 minutes before flaming combustion was evident.

In six laboratory tests the cellulose insulation started smoldering in less than eight hours. In two other tests the open flame condition occured within 11 hours. The report demonstrates that some recessed electrical lights reach temperatures in excess of that required to initiate smoldering combustion in some types of cellulose insulation.

(2) *NBS Tests Involving Recessed Light Fixtures.* NBS conducted tests involving eight recessed light fixtures similar to the tests later conducted by the Commission's laboratory. In these tests conducted at the National Bureau of Standards, cellulose insulation was placed around a recessed light fixture installed between simulated attic floor joists. A bulb exceeding the rated wattage of the fixture was used in these tests. These tests showed that fires could be initiated by insulation over these recessed light fixtures when light bulbs exceeding the rated wattage were used.

(3) *Tennessee Technological University Report, Department of Energy.* (Oak Ridge National Laboratory, Tennessee Technological University). This draft report was developed under a Department of Energy contract to consider the safety of recessed lights and cellulose insulation. The report states it has been dramatically demonstrated that over-lamped recessed light fixtures improperly covered with cellulose insulation are fire hazards. The experimental work also indicates that the hazard can be reduced and possibly eliminated by requiring an open top barrier to accompany the fixture.

(4) *July 25, 1977 Report by Bruce V. Ettling of Technical Fire Investigation Services.* This report also states that it is possible to ignite some cellulose insulation with a recessed lighting fixture even where the cellulose insulation does not burn in a flame test.

(5) *Oklahoma City Fire Department Headquarters Report—July 27, 1978, Protective Cover for Recessed Light Fixtures.* In this report the Assistant Fire Chief of the Oklahoma City Fire Department states that attic fires result when enough insulation is placed directly on top of recessed light fixtures, regardless of the type of insulation. According to the Assistant Fire Chief, insulation holds the heat in, so that the temperature inside a recessed light fixture can build to as high as 600 degrees Fahrenheit when enough insulation is placed on top of the fixture. In cases involving non-flammable insulation, the fires are caused by the conductance of heat from the light fixtures along hangers and conduits to wood framing members in the attics. According to the Assistant Fire Chief the report was based on fire incident experience in Oklahoma City during the winter of 1977, and tests of different kinds of recessed fixtures in a simulated attic with different kinds of insulation conducted by the Oklahoma City Fire Department and Tinker Air Force Base.

Although not all guard systems were evaluated, the report states that recessed light fixture housings that did not cause fires in the tests were those surrounded with heat sink guards made of 26 gauge metal.

(6) *Requirements of Building Codes and the National Electrical Code.* The Commission is aware that several building codes require spacing between exhaust flues and combustible materials. Also, the National Electrical Code requires spacing between insulation and certain electrical devices.

Based on available information, the Commission believes that cellulose insulation can come into contact with recessed lighting fixtures or exhaust flues by one of the following methods:

(1) Failure of the installer to take preventive measures to keep blown-in or poured-in insulation from contacting heat sources.

(2) After insulation has been installed, displacement of some of the insulation by air currents in the attic to bring the insulation into contact with heat sources.

Cellulose insulation exposed to a source of heat, such as a recessed electrical light fixture, or an exhaust flue, might ignite. The smoldering may continue to spread, causing ignition of other combustibles in the attic area, and may result in flaming combustion. When the cellulose insulation ignites and a fire is started in a residence or dwelling, consumers in the residence or dwelling would be exposed to a risk of injury from burns or smoke inhalation. Once flaming combustion occurs, either directly from the cellulose or through ignition of other combustibles, the fire may spread rapidly and fully involve the attic. A fire of this magnitude produces large amounts of heat and smoke, and if not extinguished may eventually consume much of the structure. The most probable injury scenario involves initiation of smoldering during the late evening hours when lighting and, in proper season, heating are at maximum use, followed by full development of the fire in the early morning hours while the occupants are asleep. Since the smoke and flames of attic fires typically travel upwards to the roof, any smoke alarm device in the living area would not be sensitized until the fire was well advanced.

H. Statutory Findings

Section 27(e) of the Consumer Product Safety Act authorizes the Commission to require manufacturers of consumer products to give notification of performance and technical data related to performance and safety at the time of original purchase to prospective purchasers and to the first purchaser of such product for purposes other than resale, as necessary to carry out the purposes of the act. As provided in section 2(b) of the CPSA (15 U.S.C. 2051(b)) one purpose of the act is to protect the public against unreasonable risks of injury associated with consumer products.

The Commission has considered the available fire incident information and technical information discussed above concerning improperly installed cellulose insulation. This information indicates that there is a serious risk of injury from fire associated with cellulose insulation that is improperly installed too close to the sides and over the top of some recessed electrical light fixtures, or where cellulose insulation is installed too close to the exhaust flues from heat producing devices or apparatus such as furnaces, water heaters, and space heaters. Cellulose insulation that is improperly installed can ignite in a relatively short time as a result of the heat that is trapped by the insulation and builds up around the ignition source. The insulation may ignite even if the insulation complies with the amended interim standard and even if a recommended wattage bulb is used in the recessed electrical light fixture. The ignition of the insulation can lead to flaming combustion of the structure, exposing consumers to the risk of serious injury from fire. The Commission believes that the provisions of Part 1404 will provide persons installing cellulose insulation with information concerning the proper installation of such insulation and should substantially reduce the likelihood of fires associated with improperly installed cellulose insulation. The Commission believes that the labeling requirement would benefit consumers and would significantly reduce the risk of injury from fire associated with improperly installed cellulose insulation. By requiring simple and explicit safety information concerning proper installation to be prominently and conspicuously placed on the insulation container, the Commission will have increased the likelihood that professionals and consumers will install the product in a safe manner.

The Commission also considered the potential economic impact of requiring labeling to eliminate or reduce the risk of injury from fires associated with improperly installed cellulose insulation. The Commission concludes that the regulation would have a minimal impact on the price, utility, and availability of the product; since the regulation would not require manufacturers to alter the product, apart from the labels on the container. In addition, the effective date would allow most manufacturers time to deplete a large number of bags in inventory with non-complying labels and, thereby, significantly limit the temporary expense of handstick-on labels. (Even if hand stick-on labels are needed, the Commission believes that the expense of these labels is relatively small. As explained earlier, hand stick-on labels would involve a one-time relabeling cost of approximately six to seven cents per bag until the inventory of bags is depleted.) The Commission does not believe that the regulation would have an adverse effect on industry by deterring purchasers from buying the product. The labeling required by the regulation is not so explicit and shocking in its portrayal of the risk of injury as to constitute an unwarranted deterrent to the marketing and availability of cellulose insulation to consumers. In addition, many manufacturers of cellulose insulation are already labeling their bags with some type of warning concerning installation near recessed electrical lights.

As a result of the serious nature of the risks of injury from fire presented by improperly installed cellulose insulation and the minimal impact of the regulation on the price, utility, and availability of the product, the Commission finds that there is an unreasonable risk of injury associated with cellulose insulation that does not comply with the requirements of Part 1404. This unreasonable risk of injury is due to fires that can result where cellulose insulation is improperly installed too close to the sides or over the top of a recessed electrical light fixture or where cellulose insulation is installed too close to the exhaust flues of furnaces, water heaters, space heaters, or other heat-producing devices.

The Commission therefore concludes that, in order to carry out the purpose of the CPSA to protect the public against unreasonable risks of injury, it is necessary to require manufacturers of cellulose insulation to provide the notifications required by Part 1404 as set forth below. The regulation issued below requires manufacturers of cellulose insulation to label the insulation containers with information concerning the flammability hazard associated with cellulose insulation that is improperly installed.

Therefore, under provisions of the Consumer Product Safety Act (Sec. 27(e), Pub. L. 92–573, 86 Stat. 1228; 15 U.S.C. 2076(e), the Commission amends Title 16, Chapter II, of the Code of Federal Regulations by adding to subchapter B a new part 1404, reading as follows:

PART 1404—CELLULOSE INSULATION

Sec.

1404.1 Scope, application, and effective date.
1404.2 Background.
1404.3 Definitions.
1404.4 Requirements to provide performance and technical data by labeling—Notice to purchasers.

Authority.—Sec. 2, 27, 35, Pub. L. 92–573, Pub. L. 95–319; 86 Stat. 1207, 1228; 92 Stat. 386 (15 U.S.C. 2051, 2076, 2082).

§ 1404.1 Scope, application, and effective date.

(a) *Scope.* This Part 1404 establishes a requirement for manufacturers, including importers, of cellulose insulation to notify (1) prospective

purchasers of such products at the time of original purchase and (2) the first purchasers of such products for purposes other than resale (installers and consumers) of ways to avoid the fire hazard that exists where cellulose insulation is installed too close to the sides or over the top of a recessed electrical light fixture or where cellulose insulation is installed too close to the exhaust flues from heat-producing devices or apparatus such as furnaces, water heaters, and space heaters. The notification consists of a warning label on the containers of cellulose insulation.

(b) *Application and effective date.* This rule applies to cellulose insulation that is for sale to consumers for installation in households or residences, as well as insulation that is produced or distributed for installation by professionals in households or residences. Cellulose insulation that is labeled as, marketed, and sold solely for nonresidential installation is not included within the scope of this proceeding. The rule applies to all products manufactured after October 15, 1979.

§ 1404.2 Background.

Based on available fire incident information, engineering analysis of the probable fire scenarios, and laboratory tests, the Consumer Product Safety Commission has determined that fires can occur where cellulose insulation is improperly installed too close to the sides or over the top of recessed electrical light fixtures, or installed too close to the exhaust flues from heat producing devices or apparatus such as furnaces, water heaters, and space heaters. These fires may result in serious injuries or deaths. Presently available information indicates that fires may occur where cellulose insulation is improperly installed even though the cellulose insulation complies with the Commission's amended interim standard for cellulose insulation (16 CFR Part 1209) based on GSA Specification HH–I–515D. The Commission has determined that it is necessary to require labeling to inform persons installing cellulose insulation and consumers in whose homes the insulation is installed of the fire hazard associated with improperly installed cellulose insulation and the method of properly installing the insulation to prevent this hazard. The Commission anticipates that this regulation will accomplish the purpose of helping protect the public against the unreasonable risk of injury associated with improperly installed cellulose insulation.

§ 1404.3 Definitions.

The definitions in section 3 of the Consumer Product Safety Act (15 U.S.C. 2052) apply to this Part 1404.

"Cellulose insulation" is cellulosic fiber, loose fill, thermal insulation that is suitable for blowing or pouring applications.

"Manufacturer" means any person who manufactures or imports a consumer product. The term includes both a person who manufactures the product at the direction of another (such as a packager) and the person at whose direction the product is manufactured (such as the marketer of the brand).

§ 1404.4 Requirements to provide performance and technical data by labeling—Notice to purchasers.

(a) Manufacturers of cellulose insulation shall give notification of performance and technical data related to performance and safety (1) to prospective purchasers of such products at the time of original purchase and (2) to the first purchaser of such products for purposes other than resale in the following manner. Manufacturers of cellulose insulation shall label all containers of cellulose insulation with the following statement, using capital letters as indicated:

CAUTION

POTENTIAL FIRE HAZARD: Keep cellulose insulation at least three inches away from the sides of recessed light fixtures. Do not place insulation over such fixtures so as to entrap heat.

Also keep this insulation away from exhaust flues of furnaces, water heaters, space heaters, or other heat-producing devices.

To be sure that insulation is kept away from light fixtures and flues, use a barrier to permanently maintain clearance around these items. Check with local building or fire officials for guidance on installation and barrier requirements.

REQUEST TO INSTALLER: Remove this label and give it to the consumer at completion of job.

(b) The labeling statement required by § 1404.4(a) shall appear prominently and conspicuously on the container. The word "CAUTION" shall appear in capital letters at least one-fourth inch in height. The words "POTENTIAL FIRE HAZARD" and "REQUEST TO INSTALLER" shall appear in capital letters at least three-sixteenths inch in height. The remainder of the statement shall appear in capital letters at least three-sixteenths inch in height, with lower case letters in corresponding proportion but at least one-eighth inch in height. The labeling statement shall be enclosed within a rectangle formed with lines at least one-sixteenth inch in width. The labeling statement shall be printed with legible type in a color which contrasts with the background on which the statement is printed.

(c) To meet this requirement, manufacturers may use any type of label, including one which is pressure sensitive or glued-on, provided the label is made in such a manner that it will remain attached to the container for the expected time interval between the manufacture of the product and its installation.

Dated: July 2, 1979.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

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